

Test Bank for Calculus with Applications 12th Lial

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Perform the indicated operation.

1) $(8x^2 - 3x - 9) + (-5x^2 - 7x + 12)$

A) $-3x^2 + 10x + 3$

B) $3x^2 - 10x + 3$

C) $13x^2 - 10x + 21$

D) $13x^2 - 10x - 21$

Answer: B

2) $(9n^5 + 20n^3 + 5) - (5n^5 - 8n^3 - 2)$

A) $4n^5 + 28n^3 + 3$

B) $39n^8$

C) $4n^5 + 28n^3 + 7$

D) $4n^5 + 25n^3 + 3$

Answer: C

3) $(2m^5 + 7m^2 - 3m) + (6m^5 + 5m^2 + 6m)$

A) $3m^5 + 7m^2 + 13m$

B) $23m^8$

C) $8m + 12m^5 + 3m^2$

D) $8m^5 + 12m^2 + 3m$

Answer: D

4) $(4q^2 - 6q - q^3 + 2) - (6q^2 - 6q - q^3 + 7)$

A) $-3q^2 - 2q^3 + 5$

B) $-2q^2 - 5$

C) $-3q^2 - 9$

D) $-2q^2 - 12q - 9$

Answer: B

5) $(5p^2 + 4p - p^3 + 7) - (8p^2 - 2p - p^3 + 4)$

A) $-3p^2 - 6p - 11$

B) $-4p^2 + 2p - 11$

C) $-4p^2 - 2p^3 + 2p + 3$

D) $-3p^2 + 6p + 3$

Answer: D

6) $(7r^4 + 9r^2 - 7r) - (-8r^3 + 3r^2 - 7r - 1)$

A) $7r^4 + 8r^3 + 6r^2 + 1$

B) $8r^4 + 9r^3 + 12r^2 + 1$

C) $11r^7 + 12r^3$

D) $7r^4 - 8r^3 + 12r^2 - 1$

Answer: A

7) $(6k^4 - 8k^3 + 6k^2 + 2) + (5k^4 + 2k^3 + 3k^2 + 5)$

A) $11k^8 - 6k^6 + 9k^4 + 7$

C) $11k^4 - 6k^3 + 9k^2 + 7$

B) $4k^4 + 4k^3 + 11k^2 - 3$

D) $14k^{18} + 7$

Answer: C

8) $(9y^7 - 9y^6 - 8y^5 + 1) - (4y^7 - 7y^6 + 6y^5 + 2)$

A) $5y^7 - 16y^6 - 2y^5 + 3$

C) $13y^7 - 16y^6 - 2y^5 - 1$

B) $5y^7 - 2y^6 - 14y^5 - 1$

D) $13y^7 - 16y^6 - 2y^5 + 3$

Answer: B

9) $3(q^2 - 3q + 3) + 2(1q^2 + q - 5)$

A) $5q^2 + 11q + 1$

B) $5q^2 - 7q - 1$

C) $4q^2 + 11q + 1$

D) $5q^2 + 7q - 1$

Answer: B

10) $0.36(2x^2 + 2x - 5) - (3.23x^2 - 6x + 6.865)$

A) $-2.51x^2 - 4x - 8.665$

C) $-1.23x^2 + 8x - 11.865$

B) $-2.51x^2 + 6.72x - 8.665$

D) $-1.23x^2 + 6.72x - 8.665$

Answer: B

- 11) $-5p(4p^2 - 12p + 6)$
 A) $-20p^3 + 60p^2 - 30p$ B) $-20p^3 + 60p^2 + 6p$ C) $-20p^3 + 30p^2$ D) $-20p^3 - 12p^2 - 30p$
 Answer: A
- 12) $4m(-9m^2 - 2m + 12)$
 A) $-36m^3 - 8m + 48$ B) $36m^3 + 8m^2 - 48m$
 C) $-36m^2 - 8m + 48$ D) $-36m^3 - 8m^2 + 48m$
 Answer: D
- 13) $5y^2(12y^2 - 6y - 1)$
 A) $60y^4 - 30y^2 - 5y$ B) $-60y^4 + 30y^3 + 5y^2$ C) $60y^3 - 30y^2 - 5y$ D) $60y^4 - 30y^3 - 5y^2$
 Answer: D
- 14) $(4x + 10)(x + 2)$
 A) $x^2 + 18x + 17$ B) $4x^2 + 18x + 20$ C) $4x^2 + 17x + 20$ D) $x^2 + 20x + 18$
 Answer: B
- 15) $(3k + 2)(k + 11)$
 A) $3k^2 + 35k + 22$ B) $3k^2 + 33k + 22$ C) $3k^2 + 22k + 35$ D) $3k^2 + 35k + 35$
 Answer: A
- 16) $(m + 12)(-4m - 7)$
 A) $-4m^2 - 84m - 55$ B) $-4m^2 - 55m - 55$ C) $-4m^2 - 55m - 84$ D) $-4m^2 - 57m - 84$
 Answer: C
- 17) $(-4p - 10)(-4p - 11)$
 A) $-8p^2 + 84p + 110$ B) $16p^2 + 84p + 110$ C) $-8p^2 + 84p + 84$ D) $16p^2 + 84p + 84$
 Answer: B
- 18) $(x - 11y)(x + 3y)$
 A) $x^2 - 8xy - 8y^2$ B) $x^2 - 11xy - 33y^2$ C) $x - 8xy - 33y$ D) $x^2 - 8xy - 33y^2$
 Answer: D
- 19) $(a - 3b)(-3a + 7b)$
 A) $a^2 + 16ab - 21b^2$ B) $-3a^2 + 16ab + 16b^2$ C) $a^2 + 16ab + 16b^2$ D) $-3a^2 + 16ab - 21b^2$
 Answer: D
- 20) $(3x + 2)(3x - 2)$
 A) $9x^2 + 12x - 4$ B) $9x^2 - 4$ C) $3x^2 - 12x - 4$ D) $9x^2 - 12x - 4$
 Answer: B
- 21) $(2r + 5)(2r + 5)$
 A) $4r^2 + 25r + 20$ B) $2r^2 + 20r + 19$ C) $2r^2 + 19r + 25$ D) $4r^2 + 20r + 25$
 Answer: D

$$22) \left(q + \frac{4}{3} \right) \left(q + \frac{3}{4} \right)$$

A) $q^2 + 1$

B) $2q^2 + \frac{25}{12}q + 1$

C) $q^2 + \frac{25}{12}q + 1$

D) $q^2 + \frac{25}{6}q + 1$

Answer: C

$$23) \left(\frac{1}{3}m - 1 \right) \left(\frac{5}{3}m - 2 \right)$$

A) $\frac{5}{3}m^2 - \frac{7}{3}m + 4$

B) $\frac{5}{6}m^2 - \frac{7}{3}m + 2$

C) $\frac{5}{3}m^2 - \frac{7}{3}m + 2$

D) $\frac{5}{9}m^2 - \frac{7}{3}m + 2$

Answer: D

$$24) (x + 5)(x^2 - x + 7)$$

A) $x^3 + 35$

B) $x^3 + 6x^2 + 12x + 35$

C) $x^3 + 4x^2 + 2x + 35$

D) $x^3 + 4x^2 + 35$

Answer: C

$$25) (m - 5)(9m^2 + m + 8)$$

A) $9m^3 - 44m^2 + 13m - 40$

B) $9m^3 - 46m^2 + 3m - 40$

C) $9m^3 + 44m^2 + 3m - 40$

D) $9m^3 - 44m^2 + 3m - 40$

Answer: D

$$26) (3m - 5)(2m^3 + 4m^2 + 5m + 5)$$

A) $6m^4 + 2m^3 - 10m^2 - 10m - 25$

B) $6m^4 + 2m^3 - 5m^2 - 10m - 25$

C) $6m^4 - 8m^3 - 5m^2 - 10m - 25$

D) $6m^4 + 2m^3 - 5m^2 + 15m - 25$

Answer: B

$$27) (-4x + 6y)(2x - 2y + 1)$$

A) $-8x^2 + 8xy - 4x - 12y^2$

B) $-8x^2 + 20xy - 4x - 12y^2 + 6y$

C) $-8x^2 + 20xy + 20y^2$

D) $-8x^2 + 12xy - 4x - 12y^2 + 6y$

Answer: B

$$28) (-4a^2 + 4b)(3a^2 + 2b + c)$$

A) $-12a^4 + 4a^2b^2 + 8b^2$

B) $-12a^4 + 4a^2b + 8b^4 - 4a^2bc$

C) $-12a^4 + 4a^2b - 4a^2c + 8b^2 + 4bc$

D) $-12a^2 + 4ab - 4a^2c + 8b^2 + 4c$

Answer: C

$$29) (3x^2 - 2x - 4)(x^2 + 4x + 2)$$

A) $3x^4 + 10x^3 - 6x^2 - 20x - 8$

B) $3x^4 + 12x^3 - 6x^2 - 20x - 8$

C) $3x^4 + 12x^3 - 2x^2 - 20x - 8$

D) $3x^4 + 10x^3 - 2x^2 - 20x - 8$

Answer: A

$$30) (x - 5)(x - 2)(x + 2)$$

A) $x^3 - 5x^2 - 4x + 20$

B) $x^3 + 4x^2 - 5x - 20$

C) $x^3 - 9x^2 + 24x - 20$

D) $x^3 + 20$

Answer: A

31) $(n + 2)^2$

A) $n^2 + 4n + 4$

B) $4n^2 + 4n + 4$

C) $n^2 + 4$

D) $n + 4$

Answer: A

32) $(7x - 11y)^2$

A) $7x^2 - 154xy + 121y^2$

B) $49x^2 - 154xy + 121y^2$

C) $7x^2 + 121y^2$

D) $49x^2 + 121y^2$

Answer: B

33) $(3a - b)^3$

A) $27a^3 - 9a^2b + 3ab^2 - b^3$

B) $27a^3 - b^3$

C) $27a^3 - 27a^2b + 9ab^2 - b^3$

D) $27a^3 - 27a^2b - 9ab^2 - b^3$

Answer: C

Factor out the greatest common factor.

34) $9a^6 + 36a^4$

A) $9(a^6 + 4a^4)$

B) $36(a^2 + 4a)$

C) $a^4(9a^2 + 36)$

D) $9a^4(a^2 + 4)$

Answer: D

35) $10x^3 - 20x^2 + 15x$

A) $5(2x^3 - 4x^2 + 3x)$

B) $5x(2x^2 - 4x + 3)$

C) $5x(2x^2 - 20x^2 + 15x)$

D) $10x(x^2 - 2x + 3)$

Answer: B

36) $27m^9 + 6m^6 + 18m^2$

A) $3m^2(9m^7 + 2m^4 + 6)$

B) $3(9m^9 + 2m^6 + 6m^2)$

C) no common factor

D) $m^2(27m^7 + 6m^4 + 18)$

Answer: A

37) $84m^9 + 72m^6 + 84m^3$

A) no common factor

B) $12m^3(7m^6 + 6m^3 + 7)$

C) $m^3(84m^6 + 72m^3 + 84)$

D) $12(7m^9 + 6m^6 + 7m^3)$

Answer: B

38) $18x^4y^3 - 6x^3y^2 + 10x^2y$

A) $2xy(9x^3y^2 - 3x^2y + 5x)$

B) $2x^2y^2(9x^2y - 3x + 5)$

C) $2x^2y(9x^2y^2 - 3xy + 5)$

D) $2(9x^4y^3 - 3x^3y^2 + 5x^2y)$

Answer: C

39) $24x^9y^8 + 36x^6y^6 + 20x^3y^2$

A) no common factor

B) $4x^3y^2(6x^6y^6 + 9x^3y^4 + 5)$

C) $4(6x^9y^8 + 9x^6y^6 + 5x^3y^2)$

D) $4x^3(6x^6y^8 + 9x^3y^6 + 5y^2)$

Answer: B

40) $72x^8y^7 + 45x^3y^5 + 63x^6y^2$

A) $9x^3y^2(8x^5y^5 + 5y^3 + 7x^3)$

C) $9x^3(8x^5y^7 + 5y^5 + 7x^3y^2)$

B) $9(8x^8y^7 + 5x^3y^5 + 7x^6y^2)$

D) no common factor

Answer: A

41) $13m^2 - 25r^3$

A) $3(4m^2 - 8r^3)$

B) no common factor

C) $m^2(13 - 25m)$

D) $2(6m^2 + 12r^3)$

Answer: B

Factor completely. State that the polynomial is prime if it cannot be factored.

42) $x^2 + 3x - 108$

A) prime

B) $(x - 12)(x + 1)$

C) $(x + 12)(x - 9)$

D) $(x - 12)(x + 9)$

Answer: C

43) $x^2 - 4x - 45$

A) $(x + 5)(x - 9)$

B) prime

C) $(x - 5)(x + 9)$

D) $(x - 5)(x + 1)$

Answer: A

44) $x^2 + 7x + 10$

A) $(x + 10)(x - 1)$

B) $(x - 5)(x - 2)$

C) $(x + 5)(x + 2)$

D) $(x + 10)(x + 7)$

Answer: C

45) $x^2 - 10x + 24$

A) $(x + 4)(x + 6)$

B) $(x + 4)(x - 6)$

C) $(x - 4)(x + 6)$

D) $(x - 4)(x - 6)$

Answer: D

46) $x^2 - x - 45$

A) $(x + 5)(x - 9)$

B) $(x - 45)(x + 1)$

C) prime

D) $(x - 5)(x + 9)$

Answer: C

47) $4x^2 - 25x - 21$

A) $(4x + 3)(x - 7)$

B) $(x + 4)(x - 7)$

C) $(3x + 4)(x - 7)$

D) $(x - 3)(x - 7)$

Answer: A

48) $9x^2 - 74x + 16$

A) $(2 - 9x)(9x - 2)$

B) $(9x + 14)(9x - 2)$

C) $(9x - 2)(x - 8)$

D) $(9x - 2)(x + 8)$

Answer: C

49) $15z^2 - 2z - 8$

A) $(15z + 2)(z - 4)$

B) prime

C) $(3z - 2)(5z + 4)$

D) $(3z + 2)(5z - 4)$

Answer: D

50) $u^2 - 4uv - 12v^2$

A) $(u - 2v)(u + 6v)$

B) prime

C) $(u - 2v)(u + v)$

D) $(u + 2v)(u - 6v)$

Answer: D

- 51) $x^2 - 9xy + 14y^2$
 A) $(x - 14y)(x - y)$ B) prime C) $(x + 7y)(x - 2y)$ D) $(x - 7y)(x - 2y)$
 Answer: D
- 52) $6x^2 - 5xt - 4t^2$
 A) $(2x - t)(3x + 4t)$ B) $(2x + t)(3x - 4t)$ C) $(6x + t)(x - 4t)$ D) prime
 Answer: B
- 53) $12m^2 - 31mn + 20n^2$
 A) $(4mn + 5)(3mn + 4)$ B) $(4mn - 5)(3mn - 4)$ C) $(4m - 5n)(3m - 4n)$ D) $(4m - 5n)(3m + 4n)$
 Answer: C
- 54) $8x^2 - 8x - 48$
 A) $8(x - 2)(x + 3)$ B) prime C) $8(x + 2)(x - 3)$ D) $(8x + 16)(x - 3)$
 Answer: C
- 55) $24x^2 - 104x - 80$
 A) $8(3x - 2)(x + 5)$ B) $8(3x + 2)(x - 5)$ C) $(24x + 16)(x - 5)$ D) prime
 Answer: B
- 56) $6y^2 + 27y - 15$
 A) $3(2y + 1)(y - 5)$ B) $3(2y - 1)(y + 5)$ C) $(6y - 3)(y + 5)$ D) prime
 Answer: B
- 57) $2x^2 - 6xy - 8y^2$
 A) $2(x - y)(x + 4y)$ B) $2(x + y)(x - 4y)$ C) $(2x - 2y)(x + 4y)$ D) prime
 Answer: B
- 58) $5y^3 - 5y^2 - 30y$
 A) $(y - 2)(5y^2 + 15)$ B) $5y(y + 2)(y - 3)$ C) $5y(y - 2)(y + 3)$ D) $(5y^2 + 10y)(y - 3)$
 Answer: B
- 59) $18x^3 - 78x^2 - 60x$
 A) $6(3x - 2)(x + 5)$ B) $(x^2 - 5)(18x + 12)$ C) $x(3x + 2)(6x - 30)$ D) $6x(3x + 2)(x - 5)$
 Answer: D
- 60) $24x^2 + 14xy + 2y^2$
 A) prime B) $2(3x + y)(4x + y)$ C) $(6x + 2y)(4x + y)$ D) $2(3x - y)(4x - y)$
 Answer: B
- 61) $x^3 - 11x^2 + 30x$
 A) $x(x - 5)(x + 6)$ B) $x(x^2 - 11x + 30)$ C) $x(x - 5)(x - 6)$ D) $x(x + 5)(x - 6)$
 Answer: C
- 62) $a^3b - 9a^2b^2 + 20ab^3$
 A) $ab(a - 20b)(a - b)$ B) $ab(a - 5b)(a - 4b)$ C) $a(ab - 5)(ab - 4)$ D) $ab(a - 5b)(a + 4b)$
 Answer: B

- 63) $4x^3 - 28x^2y - 120xy^2$
 A) $4x(x - 10y)(x + 3y)$ B) $4(x - 10y)(x + 3y)$ C) $4x(x + 10y)(x - 3y)$ D) $4xy(x - 10y)(x + 3y)$
 Answer: A
- 64) $32x^4 + 72x^3y + 36x^2y^2$
 A) $4xy(2x + 1)(4x + 9)$ B) $4x^2y^2(2x + 3)(4x + 3)$
 C) $4x^2(2x + 1)(4x + 9)$ D) $4x^2(2x + 3y)(4x + 3y)$
 Answer: D
- 65) $81x^2 - 16$
 A) $(9x - 4)^2$ B) prime C) $(9x + 4)(9x - 4)$ D) $(9x + 4)^2$
 Answer: C
- 66) $9k^2 - 49m^2$
 A) $(3k - 7m)^2$ B) $(3k + 7m)(3k - 7m)$ C) prime D) $(3k + 7m)^2$
 Answer: B
- 67) $81y^4 - 64$
 A) $(9y^2 + 8)(9y^2 - 8)$ B) prime C) $(9y^2 + 8)^2$ D) $(9y^2 - 8)^2$
 Answer: A
- 68) $81s^2 - 25t^4$
 A) $(9s + 5t^2)(9s - 5t^2)$ B) $(9s + 5t^2)^2$ C) prime D) $(9s - 5t^2)^2$
 Answer: A
- 69) $147a^4 - 48b^2$
 A) $3(7a^2 + 4b)^2$ B) $3(7a^2 + 4b)(7a^2 - 4b)$
 C) prime D) $3(7a^2 - 4b)^2$
 Answer: B
- 70) $8a^4b - 18b^3$
 A) $2b(2a^2 + 3b)(2a^2 - 3b)$ B) prime
 C) $2b(2a - 3b)^2$ D) $2b(2a + 3b)^2$
 Answer: A
- 71) $36x^2 + 25$
 A) $(6x + 5)^2$ B) $(6x - 5)^2$ C) $(6x + 5)(6x - 5)$ D) prime
 Answer: D
- 72) $25x^4 - 49y^4$
 A) $-24x^4$ B) prime
 C) $(5x^2 - 7y^2)(5x^2 + 7y^2)$ D) $(5x - 7y)(5x + 7y)(5x^2 + 7y^2)$
 Answer: C

73) $100pm^4 - 100pn^4$

A) $100p(m^2 + n^2)(m + n)(m - n)$

C) $100p(m^2 - n^2)^2$

Answer: A

B) $p(10m^2 + n^2)(10m + n)(10m - n)$

D) $100(m^2p + n^2)(mp + n)(mp - n)$

74) $x^4 - 625$

A) $(x + 5)^2(x - 5)^2$

C) $(x^2 + 25)(x + 5)(x - 5)$

Answer: C

B) prime

D) $(x^2 - 25)(x + 5)(x - 5)$

75) $x^2 + 50x + 625$

A) $(x + 25)(x - 25)$

B) prime

C) $(x - 25)^2$

D) $(x + 25)^2$

Answer: D

76) $16x^2 + 24x + 9$

A) $(4x + 3)^2$

B) Prime

C) $(4x - 3)^2$

D) $(4x + 3)(4x - 3)$

Answer: A

77) $x^2 - 6xy + 9y^2$

A) $(x + 3y)^2$

B) prime

C) $(x - 3y)(x + 3y)$

D) $(x - 3y)^2$

Answer: D

78) $x^2 - 8x + 64$

A) prime

B) $(x + 8)(x - 8)$

C) $(x - 8)^2$

D) $(x + 8)^2$

Answer: A

79) $27x^2 + 90x + 75$

A) $3(3x - 5)(3x + 5)$

B) $(9x + 15)(3x + 5)$

C) $3(9x^2 + 30x + 25)$

D) $3(3x + 5)^2$

Answer: D

80) $196x^2 - 336xy + 144y^2$

A) $4(7x + 6y)(7x - 6y)$

B) $4(7x - 6y)^2$

C) $4(49x^2 - 84xy + 36y^2)$

D) $(28x - 24y)(7x - 6y)$

Answer: B

Factor completely.

81) $729p^3 - 1$

A) $(9p + 1)(81p^2 - 9p + 1)$

B) $(729p - 1)(p^2 + 9p + 1)$

C) $(9p - 1)(81p^2 + 1)$

D) $(9p - 1)(81p^2 + 9p + 1)$

Answer: D

82) $x^3 - 343$

A) $(x - 7)(x^2 + 49)$

B) $(x + 343)(x^2 - 1)$

C) $(x - 7)(x^2 + 7x + 49)$

D) $(x + 7)(x^2 - 7x + 49)$

Answer: C

83) $1,000y^3 - 343$

A) $(1,000y - 7)(y^2 + 70y + 49)$

C) $(10y + 7)(100y^2 - 70y + 49)$

Answer: D

B) $(10y - 7)(100y^2 + 49)$

D) $(10y - 7)(100y^2 + 70y + 49)$

84) $27a^3 - 64b^3$

A) $(3a - 4b)(9a^2 + 16b^2)$

C) $(3a - 4b)(9a^2 + 12ab + 16b^2)$

Answer: C

B) $(27a - 4b)(a^2 + 12ab + 16b^2)$

D) $(3a + 4b^2)(9a^2 - 12ab + 16b^2)$

85) $250k^3m - 16m^4$

A) $2m(5k + 2m^2)(25k^2 - 10km + 4km^2)$

C) $2m(125k - 2m)(k^2 + 10km + 4m^2)$

Answer: B

B) $2m(5k - 2m)(25k^2 + 10km + 4m^2)$

D) $(10km - 4m^2)(25k^2 + 4m^2)$

86) $1,000s^3 + 1$

A) $(10s + 1)(100s^2 + 1)$

C) $(10s - 1)(100s^2 + 10s + 1)$

Answer: D

B) $(1,000s + 1)(s^2 - 10s + 1)$

D) $(10s + 1)(100s^2 - 10s + 1)$

87) $t^3 + 64$

A) $(t + 4)(t^2 + 16)$

B) $(t - 64)(t^2 - 1)$

C) $(t + 4)(t^2 - 4t + 16)$

D) $(t - 4)(t^2 + 4t + 16)$

Answer: C

88) $343c^3 + 1,000$

A) $(7c - 10)(49c^2 + 70c + 100)$

C) $(7c + 10)(49c^2 - 70c + 100)$

Answer: C

B) $(343c + 10)(c^2 - 70c + 100)$

D) $(7c + 10)(49c^2 + 100)$

Write the expression in lowest terms.

89) $\frac{8k}{10}$

A) $\frac{4k}{5}$

B) $\frac{5}{4k}$

C) $-\frac{8k}{10}$

D) $\frac{4}{5}$

Answer: A

90) $\frac{10k^3}{5k}$

A) 5

B) $2k$

C) $2k^2$

D) $5k^2$

Answer: C

91) $\frac{(8x - 3)}{-(3 - 8x)}$

A) $\frac{3 - 8x}{-3 + 8x}$

B) $\frac{8x - 3}{-3x + 8}$

C) 1

D) -1

Answer: C

$$92) \frac{(y+7)(y-5)}{(y-5)(y+8)}$$

$$A) \frac{y-7}{y-8}$$

$$B) \frac{2y-5}{2y+3}$$

$$C) \frac{y+5}{y+3}$$

$$D) \frac{y+7}{y+8}$$

Answer: D

$$93) \frac{a^2 - 5a}{(a+6)(a-5)}$$

$$A) \frac{a^2}{a+6}$$

$$B) \frac{1}{a+6}$$

$$C) \frac{a-5}{a+6}$$

$$D) \frac{a}{a+6}$$

Answer: D

$$94) \frac{3x+3}{12x^2+21x+9}$$

$$A) \frac{3x+4}{4x+21}$$

$$B) \frac{1}{4x+3}$$

$$C) \frac{3x+3}{12x^2+21x+9}$$

$$D) \frac{3x}{4x+3}$$

Answer: B

$$95) \frac{y^2 - 2y - 15}{y^2 + 3y - 40}$$

$$A) \frac{-2y-3}{3y-8}$$

$$B) \frac{y+3}{y+8}$$

$$C) \frac{-2y-15}{3y-40}$$

$$D) -\frac{y^2-2y-15}{y^2+3y-40}$$

Answer: B

$$96) \frac{y^2 + 5y - 24}{y^2 + 2y - 48}$$

$$A) \frac{y-3}{y-6}$$

$$B) \frac{5y-24}{2y-48}$$

$$C) -\frac{y^2+5y-24}{y^2+2y-48}$$

$$D) \frac{5y-1}{2y-2}$$

Answer: A

$$97) \frac{a^2 - 49}{a^2 + 11a + 28}$$

$$A) \frac{a+7}{a+4}$$

$$B) \frac{a-7}{a+4}$$

$$C) \frac{a-7}{a-4}$$

$$D) \frac{a+7}{a-4}$$

Answer: B

$$98) \frac{36 - k^2}{k^2 - 11k + 30}$$

$$A) \frac{k+6}{k-5}$$

$$B) -\frac{k-6}{k-5}$$

$$C) -\frac{k+6}{k-5}$$

$$D) -\frac{k+6}{k+5}$$

Answer: C

Perform the indicated operation and simplify.

$$99) \frac{3x^2}{4} \cdot \frac{28}{x^3}$$

$$A) \frac{84x^2}{4x^3}$$

$$B) \frac{21}{x}$$

$$C) \frac{21x^2}{x^3}$$

$$D) \frac{x}{21}$$

Answer: B

$$100) \frac{3p-3}{p} \cdot \frac{2p^2}{8p-8}$$

$$A) \frac{6p^3-6p^2}{8p^2-8p}$$

$$B) \frac{4}{3p}$$

$$C) \frac{24p^2+48p+24}{2p^3}$$

$$D) \frac{3p}{4}$$

Answer: D

$$101) \frac{2x^2}{5} \div \frac{x^3}{40}$$

$$A) \frac{16}{x}$$

$$B) \frac{80x^2}{5x^3}$$

$$C) \frac{16x^2}{x^3}$$

$$D) \frac{x}{16}$$

Answer: A

$$102) \frac{4p-4}{p} \div \frac{8p-8}{3p^2}$$

$$A) \frac{12p^3-12p^2}{8p^2-8p}$$

$$B) \frac{32p^2+64p+32}{3p^3}$$

$$C) \frac{3p}{2}$$

$$D) \frac{2}{3p}$$

Answer: C

$$103) \frac{k^2+8k+16}{k^2+9k+20} \cdot \frac{k^2+5k}{k^2+8k+16}$$

$$A) \frac{k^2+5k}{k+4}$$

$$B) \frac{1}{k+4}$$

$$C) \frac{k}{k+4}$$

$$D) \frac{k}{k^2+9k+20}$$

Answer: C

$$104) \frac{k^2+10k+24}{k^2+15k+54} \cdot \frac{k^2+12k+27}{k^2+7k+12}$$

$$A) \frac{k+4}{k+9}$$

$$B) \frac{1}{k+3}$$

$$C) \frac{k+9}{k+3}$$

$$D) 1$$

Answer: D

$$105) \frac{x^2-y^2}{(x+y)^2} \cdot \frac{x+y}{x-y}$$

$$A) x^2-y$$

$$B) x-y$$

$$C) 1$$

$$D) \frac{1}{x+y}$$

Answer: C

$$106) \frac{z^2 + 10z + 24}{z^2 + 13z + 36} \div \frac{z^2 + 6z}{z^2 + 12z + 27}$$

$$A) \frac{z}{z^2 + 13z + 36}$$

$$B) \frac{z + 3}{z}$$

$$C) z + 3$$

$$D) \frac{z + 3}{z^2 + 9z}$$

Answer: B

$$107) \frac{16x^2 - 9}{x^2 - 64} \div \frac{4x + 3}{x - 8}$$

$$A) \frac{4x + 3}{x - 8}$$

$$B) \frac{(4x + 3)(16x^2 - 9)}{(x^2 - 8)(x - 8)}$$

$$C) \frac{x + 8}{4x - 3}$$

$$D) \frac{4x - 3}{x + 8}$$

Answer: D

$$108) \frac{x^2 - 25}{x^2 - 8x + 16} \div \frac{10x - 50}{x^2 - x - 12}$$

$$A) \frac{10(x + 5)}{(x + 3)(x - 4)}$$

$$B) \frac{(x + 5)(x + 3)}{10(x - 4)}$$

$$C) \frac{(x - 5)(x + 3)}{10(x - 4)}$$

$$D) x + 3$$

Answer: B

Perform the indicated operations and simplify.

$$109) \frac{2}{13x} + \frac{8}{13x}$$

$$A) \frac{10}{26x}$$

$$B) \frac{13x}{10}$$

$$C) \frac{10}{13x}$$

$$D) 1$$

Answer: C

$$110) \frac{2}{r} + \frac{6}{r - 7}$$

$$A) \frac{14r - 8}{r(7 - r)}$$

$$B) \frac{8r - 14}{r(7 - r)}$$

$$C) \frac{14r - 8}{r(r - 7)}$$

$$D) \frac{8r - 14}{r(r - 7)}$$

Answer: D

$$111) \frac{5}{r} + \frac{6}{r + 3}$$

$$A) \frac{11r + 15}{r(-3 - r)}$$

$$B) \frac{-15r - 11}{r(-3 - r)}$$

$$C) \frac{11r + 15}{r(r + 3)}$$

$$D) \frac{-15r - 11}{r(r + 3)}$$

Answer: C

$$112) \frac{m - 1}{m^2 + 5m - 24} + \frac{5m - 3}{m^2 - 8m + 15}$$

$$A) \frac{6m^2 + 31m - 19}{(m + 3)(m - 8)(m + 5)}$$

$$B) \frac{6m - 4}{2m^2 - 3m - 9}$$

$$C) 6m - 4$$

$$D) \frac{6m^2 + 31m - 19}{(m - 3)(m + 8)(m - 5)}$$

Answer: D

$$113) \frac{2}{y^2 - 3y + 2} + \frac{5}{y^2 - 1}$$

$$A) \frac{20y - 8}{(y - 1)(y + 1)(y - 2)}$$

$$B) \frac{7y - 8}{(y - 1)(y - 2)}$$

$$C) \frac{8y - 7}{(y - 1)(y + 1)(y - 2)}$$

$$D) \frac{7y - 8}{(y - 1)(y + 1)(y - 2)}$$

Answer: D

$$114) \frac{x}{x^2 - 16} - \frac{6}{x^2 + 5x + 4}$$

$$A) \frac{x^2 - 5x + 24}{(x - 4)(x + 4)}$$

$$B) \frac{x^2 + 5x + 24}{(x - 4)(x + 4)(x + 1)}$$

$$C) \frac{x^2 - 5}{(x - 4)(x + 4)(x + 1)}$$

$$D) \frac{x^2 - 5x + 24}{(x - 4)(x + 4)(x + 1)}$$

Answer: D

$$115) \frac{6}{z^2} - \frac{8}{z}$$

$$A) \frac{2(3 + 4z)}{z^2}$$

$$B) \frac{2(4z - 3)}{z}$$

$$C) \frac{2(3z + 4)}{z^2}$$

$$D) \frac{2(3 - 4z)}{z^2}$$

Answer: D

$$116) \frac{2ab}{a^2 - b^2} - \frac{b}{a - b} + \frac{4}{2}$$

$$A) \frac{2a + 3b}{a + b}$$

$$B) \frac{(a - b)(2a + 3b)}{a^2 - b^2}$$

$$C) \frac{2ab - b + 2}{a + b + 1}$$

$$D) \frac{2a + 3b}{a^2 - b^2}$$

Answer: A

$$117) \frac{1}{3m^2 - 8mp - 3p^2} + \frac{1}{18m^2 + 3mp - p^2} - \frac{7}{6m^2 - 19mp + 3p^2}$$

$$A) \frac{-14m - 11p}{(3m + p)(m - 3p)(6m - p)}$$

$$B) \frac{-14m + 3p}{(3m + p)(m - 3p)(6m - p)}$$

$$C) \frac{28m - 11p}{(3m + p)(m - 3p)(6m - p)}$$

$$D) \frac{28m + 3p}{(3m + p)(m - 3p)(6m - p)}$$

Answer: A

$$118) \frac{49x}{5(7x + 1)} - \frac{1}{5x(7x + 1)} + \frac{3}{x}$$

$$A) \frac{7(x + 2)}{35x^2 + 5x}$$

$$B) \frac{49x^2 + 105x + 14}{35x^2 + 5x}$$

$$C) \frac{7(x + 2)}{5x}$$

$$D) \frac{49x^2 + 105x + 14}{5x}$$

Answer: C

Solve the equation.

$$119) 2x + 3 = 5 - 7x$$

$$A) -\frac{8}{5}$$

$$B) \frac{2}{9}$$

$$C) -\frac{2}{5}$$

$$D) \frac{8}{9}$$

Answer: B

120) $7y - 3 = 27 + y$

A) 5

B) 4

C) 3

D) $\frac{15}{4}$

Answer: A

121) $8x + 6 = 4x - 18$

A) $-\frac{9}{2}$

B) 6

C) -24

D) -6

Answer: D

122) $0.5x - 0.2 = 0.4x + 0.5$

A) 0.3

B) 7

C) 3

D) 0.7

Answer: B

123) $-4.8q + 1.2 = -34.8 - 1.8q$

A) 12

B) -39

C) 7.9

D) 7.5

Answer: A

124) $\frac{p}{4} - \frac{3p}{8} = 2$

A) -14

B) -16

C) 16

D) 14

Answer: B

125) $\frac{7}{10}z - 4z + \frac{1}{5} = \frac{2}{5}$

A) $\frac{2}{3}$

B) $-\frac{2}{33}$

C) $-\frac{2}{11}$

D) $-\frac{1}{33}$

Answer: B

126) $36(x - 144) = 72$

A) 146

B) 72

C) 142

D) 144

Answer: A

127) $4x - (2x - 1) = 2$

A) $\frac{1}{6}$

B) $\frac{1}{2}$

C) $-\frac{1}{6}$

D) $-\frac{1}{2}$

Answer: B

128) $6(8x - 1) = 24$

A) $\frac{5}{8}$

B) $\frac{25}{48}$

C) $\frac{3}{8}$

D) $\frac{23}{48}$

Answer: A

129) $(y - 4) - (y + 4) = 5y$

A) -4

B) -2

C) $-\frac{8}{5}$

D) $-\frac{1}{5}$

Answer: C

$$130) \frac{1}{5}(20x - 25) = \frac{1}{4}(20x - 16)$$

$$A) \frac{1}{20}$$

$$B) -1$$

$$C) -20$$

$$D) 1$$

Answer: B

$$131) (y - 7) - (y + 6) = 10y$$

$$A) -\frac{13}{8}$$

$$B) -\frac{1}{8}$$

$$C) -\frac{13}{10}$$

$$D) -\frac{1}{10}$$

Answer: C

$$132) \frac{1}{4}(12x - 20) = \frac{1}{3}(15x - 9)$$

$$A) -1$$

$$B) -8$$

$$C) \frac{1}{8}$$

$$D) 1$$

Answer: A

$$133) -8b + 5 + 6b = -3b + 10$$

$$A) 5$$

$$B) 10$$

$$C) -10$$

$$D) -5$$

Answer: A

$$134) 6[7m - (6m + 3) + 4] = 5m + 7$$

$$A) 6$$

$$B) 1$$

$$C) \frac{13}{11}$$

$$D) -35$$

Answer: B

Solve the equation. If the solutions involve square roots, give both the exact solutions and the approximate solutions to three decimal places.

$$135) 4d^2 + 16d + 15 = 0$$

$$A) \frac{3}{2}, \frac{5}{2}$$

$$B) -\frac{2}{3}, -\frac{5}{2}$$

$$C) \frac{2}{3}, \frac{2}{5}$$

$$D) -\frac{3}{2}, -\frac{5}{2}$$

Answer: D

$$136) 4b^2 + 12b = -9$$

$$A) \frac{3}{2}, \frac{3}{2}$$

$$B) \frac{2}{3}, \frac{2}{3}$$

$$C) -\frac{2}{3}, -\frac{3}{2}$$

$$D) -\frac{3}{2}, -\frac{3}{2}$$

Answer: D

$$137) 3k^2 - 20k - 7 = 0$$

$$A) -\frac{1}{3}, 7$$

$$B) \frac{1}{20}, -\frac{1}{3}$$

$$C) -3, 7$$

$$D) -\frac{1}{3}, 3$$

Answer: A

$$138) 2m^2 - 6m = 0$$

$$A) -3, 0$$

$$B) 3, 0$$

$$C) 0$$

$$D) 3, -3$$

Answer: B

139) $21n^2 + 12n = 0$

A) 0

B) $\frac{4}{7}, 0$

C) $\frac{4}{7}, -\frac{4}{7}$

D) $-\frac{4}{7}, 0$

Answer: D

140) $3m^2 + 8m + 2 = 0$

A) $\frac{-4 + \sqrt{10}}{6} \approx -0.140, \frac{-4 - \sqrt{10}}{6} \approx -1.194$

B) $\frac{-4 + \sqrt{10}}{3} \approx -0.279, \frac{-4 - \sqrt{10}}{3} \approx -2.387$

C) $\frac{-8 + \sqrt{10}}{3} \approx -1.613, \frac{-8 - \sqrt{10}}{3} \approx -3.721$

D) $\frac{-4 + \sqrt{22}}{3} \approx 0.230, \frac{-4 - \sqrt{22}}{3} \approx -2.897$

Answer: B

141) $5n^2 = -8n - 2$

A) $\frac{-4 + \sqrt{6}}{10} \approx -0.155, \frac{-4 - \sqrt{6}}{10} \approx -0.645$

B) $\frac{-8 + \sqrt{6}}{5} \approx -1.110, \frac{-8 - \sqrt{6}}{5} \approx -2.090$

C) $\frac{-4 + \sqrt{26}}{5} \approx 0.220, \frac{-4 - \sqrt{26}}{5} \approx -1.820$

D) $\frac{-4 + \sqrt{6}}{5} \approx -0.310, \frac{-4 - \sqrt{6}}{5} \approx -1.290$

Answer: D

142) $2x^2 + 10x = -5$

A) $\frac{-5 + \sqrt{35}}{2} \approx 0.458, \frac{-5 - \sqrt{35}}{2} \approx -5.458$

B) $\frac{-5 + \sqrt{15}}{4} \approx -0.282, \frac{-5 - \sqrt{15}}{4} \approx -2.218$

C) $\frac{-10 + \sqrt{15}}{2} \approx -3.064, \frac{-5 - \sqrt{15}}{4} \approx -2.218$

D) $\frac{-5 + \sqrt{15}}{2} \approx -0.564, \frac{-5 - \sqrt{15}}{2} \approx -4.436$

Answer: D

143) $x^2 - x = 12$

A) -3, -4

B) 3, 4

C) 1, 12

D) -3, 4

Answer: D

144) $x^2 + 2x - 63 = 0$

A) -9, 1

B) 9, -7

C) -9, 7

D) 9, 7

Answer: C

145) $1 + \frac{1}{x} = \frac{20}{x^2}$

A) $-\frac{1}{5}, \frac{1}{4}$

B) 4, 5

C) -4, 5

D) -5, 4

Answer: D

146) $\frac{1}{y+5} - \frac{7}{y-5} = \frac{2}{y^2 - 25}$

A) 42

B) $\sqrt{30} \approx 5.477$

C) 7

D) -7

Answer: D

$$147) \frac{2}{t} = \frac{t}{-5t - 12}$$

A) No solution

B) 0, 36

C) -4, -6

D) $0, \frac{12}{5}$

Answer: C

$$148) \frac{12}{x - 4} = 1 + \frac{14}{x + 4}$$

A) No solution

B) -14, 12

C) -10, 12

D) 10, -12

Answer: D

$$149) \frac{2y + 3}{y} = \frac{3}{2}$$

A) $\sqrt{2} \approx 1.414$

B) 0

C) 6

D) -6

Answer: D

$$150) 1 - \frac{3}{2x} = \frac{7}{4}$$

A) $\frac{1}{2}$

B) 2

C) -2

D) $-\frac{1}{2}$

Answer: C

$$151) \frac{5 - a}{a} + \frac{3}{4} = \frac{7}{a}$$

A) -8

B) -4

C) $\sqrt{\frac{29}{20}} \approx 1.204$

D) 8

Answer: A

$$152) \frac{x}{2x + 2} = \frac{-2x}{4x + 4} + \frac{2x - 3}{x + 1}$$

A) 3

B) $\frac{3}{2}$

C) $-\frac{12}{5}$

D) -3

Answer: A

$$153) \frac{6}{x^2 - 3x + 2} + \frac{1}{x^2 + 4x - 5} = \frac{3}{x^2 + 3x - 10}$$

A) -1

B) $-\frac{31}{4}$

C) $-\frac{31}{10}$

D) $\frac{31}{4}$

Answer: B

$$154) \frac{6}{m + 3} - \frac{5}{m - 3} = \frac{-36}{m^2 - 9}$$

A) 3

B) 6

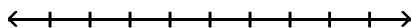
C) -3

D) No solution

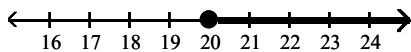
Answer: D

Write the expression in interval notation. Graph the interval.

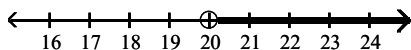
155) $x > 20$



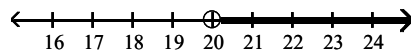
A) $[20, \infty)$



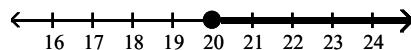
C) $(20, \infty]$



B) $(20, \infty)$

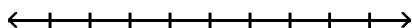


D) $[20, \infty]$

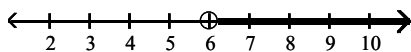


Answer: B

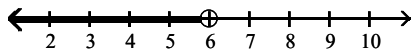
156) $x < 6$



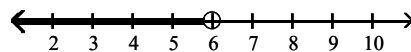
A) $(6, \infty)$



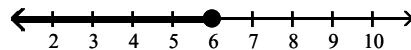
C) $[-\infty, 6)$



B) $(-\infty, 6)$

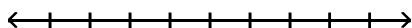


D) $(-\infty, 6]$

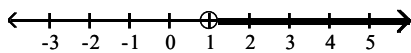


Answer: B

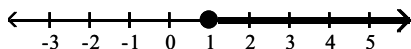
157) $x \geq 1$



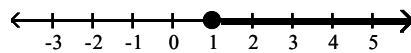
A) $(1, \infty]$



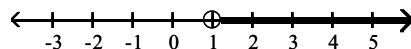
C) $[1, \infty)$



B) $[1, \infty)$

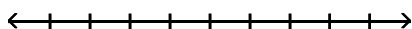


D) $(1, \infty)$



Answer: B

158) $x \leq 7$



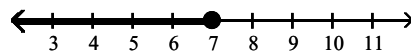
A) $[7, \infty)$



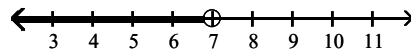
C) $(-\infty, 7]$



B) $[-\infty, 7]$

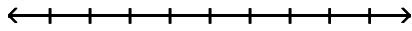


D) $(-\infty, 7)$

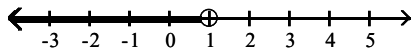


Answer: C

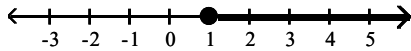
159) $1 \geq x$



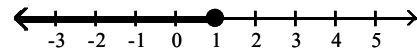
A) $[-\infty, 1)$



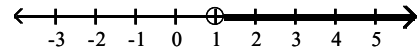
C) $[1, \infty)$



B) $(-\infty, 1]$

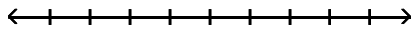


D) $(1, \infty)$

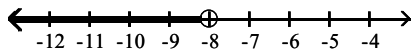


Answer: B

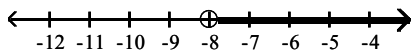
160) $-8 < x$



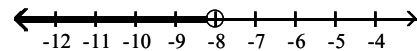
A) $[-\infty, -8)$



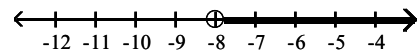
C) $(-8, \infty)$



B) $(-\infty, -8)$

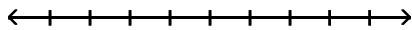


D) $(-8, \infty]$

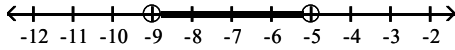


Answer: C

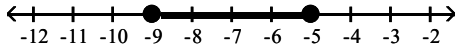
161) $-9 < x < -5$



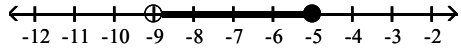
A) $(-9, -5)$



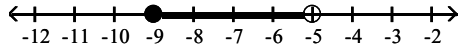
C) $[-9, -5]$



B) $(-9, -5]$

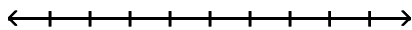


D) $[-9, -5)$

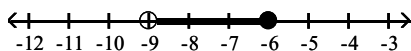


Answer: A

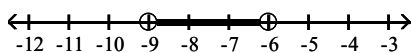
162) $-9 \leq x \leq -6$



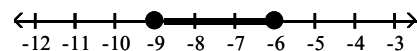
A) $(-9, -6]$



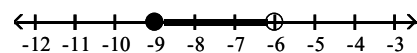
C) $(-9, -6)$



B) $[-9, -6]$

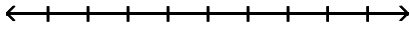


D) $[-9, -6)$

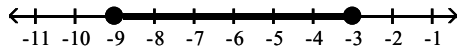


Answer: B

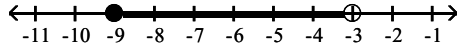
163) $-9 < x \leq -3$



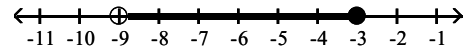
A) $[-9, -3]$



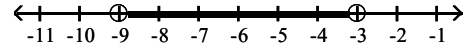
C) $[-9, -3)$



B) $(-9, -3]$



D) $(-9, -3)$



Answer: B

Using the variable x , write the interval as an inequality.

164) $(-4, 9]$

A) $-4 \leq x \leq 9$

B) $-4 < x \leq 9$

C) $-4 < x < 9$

D) $x \leq 9$

Answer: B

165) $[-2, 6)$

A) $-2 \leq x \leq 6$

B) $-2 < x \leq 6$

C) $x < 6$

D) $-2 \leq x < 6$

Answer: D

166) $[1, \infty)$

A) $x > 1$

B) $x \leq 1$

C) $x \geq 1$

D) $x < 1$

Answer: C

167) $\left(-\infty, \frac{2}{9}\right]$

A) $x > \frac{2}{9}$

B) $9 \leq x \leq 2$

C) $x < \frac{2}{9}$

D) $x \leq \frac{2}{9}$

Answer: C

168) $\left(-\infty, \frac{1}{6}\right]$

A) $x > \frac{1}{6}$

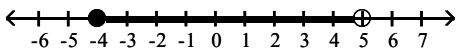
B) $6 \leq x \leq 1$

C) $x < \frac{1}{6}$

D) $x \leq \frac{1}{6}$

Answer: D

169)



A) $-4 \leq x \leq 5$

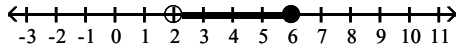
B) $-4 \leq x < 5$

C) $-4 < x \leq 5$

D) $-4 < x < 5$

Answer: B

170)



A) $2 < x \leq 6$

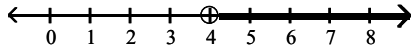
B) $2 < x < 6$

C) $2 \leq x \leq 6$

D) $2 \leq x < 6$

Answer: A

171)



A) $x \leq 4$

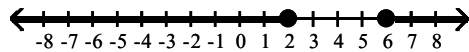
B) $x < 4$

C) $x > 4$

D) $x \geq 4$

Answer: C

172)



A) $2 \leq x \leq 6$

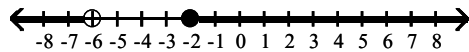
B) $x < 2$ or $x > 6$

C) $2 < x < 6$

D) $x \leq 2$ or $x \geq 6$

Answer: D

173)



A) $-6 \leq x \leq -2$

B) $-6 < x \leq -2$

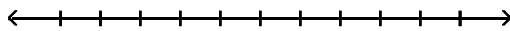
C) $x < -6$ or $x \geq -2$

D) $x < -6$ or $x > -2$

Answer: C

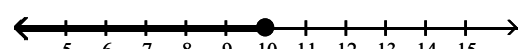
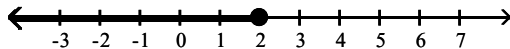
Solve the inequality and graph the solution.

174) $2x - 8 \geq 12$



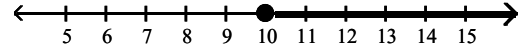
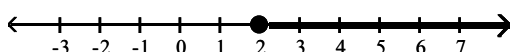
A) $(-\infty, 2]$

B) $(-\infty, 10]$



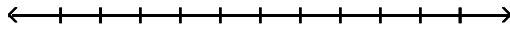
C) $[2, \infty)$

D) $[10, \infty)$

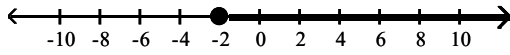


Answer: D

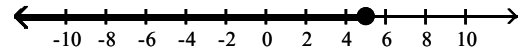
175) $9x - 9 \leq 4x - 11$



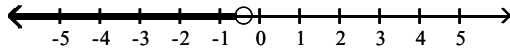
A) $[-2, \infty)$



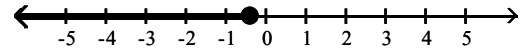
B) $(-\infty, 5]$



C) $\left(-\infty, -\frac{2}{5}\right]$

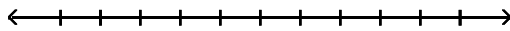


D) $\left(-\infty, -\frac{2}{5}\right]$

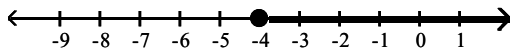


Answer: D

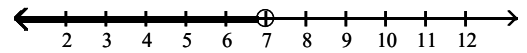
176) $-12 + 7t + 1 \geq 6t - 15$



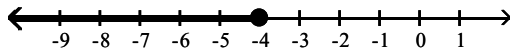
A) $[-4, \infty)$



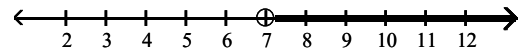
B) $(-\infty, 7)$



C) $(-\infty, -4]$

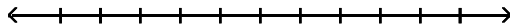


D) $(7, \infty)$

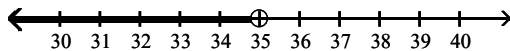


Answer: A

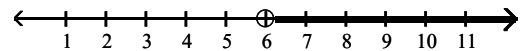
177) $35a + 35 > 5(6a + 13)$



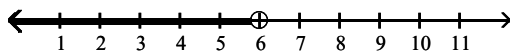
A) $(-\infty, 35)$



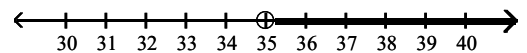
B) $(6, \infty)$



C) $(-\infty, 6)$

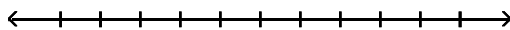


D) $(35, \infty)$

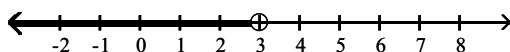


Answer: B

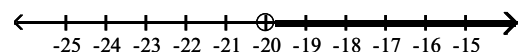
178) $-5(3x + 6) < -20x - 15$



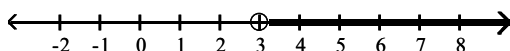
A) $(-\infty, 3)$



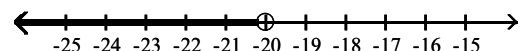
B) $(-20, \infty)$



C) $(3, \infty)$

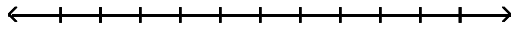


D) $(-\infty, -20)$

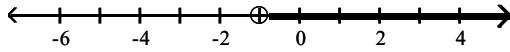


Answer: A

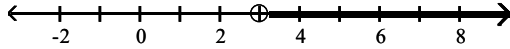
179) $m - 3(m - 7) < 5m$



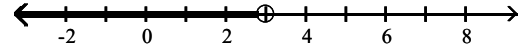
A) $(-1, \infty)$



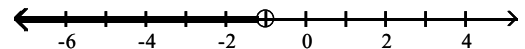
C) $(3, \infty)$



B) $(-\infty, 3)$

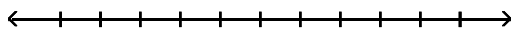


D) $(-\infty, -1)$

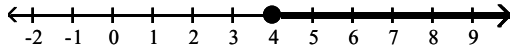


Answer: C

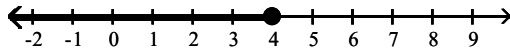
180) $21 - (2x + 3) \leq 2(x - 5) + 3x$



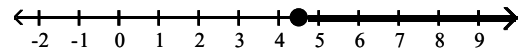
A) $[4, \infty)$



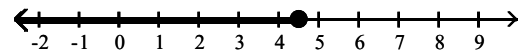
C) $(-\infty, 4]$



B) $\left[\frac{34}{7}, \infty\right)$

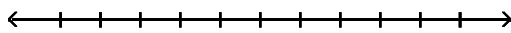


D) $\left(-\infty, \frac{34}{7}\right]$

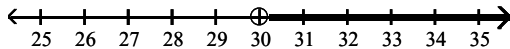


Answer: A

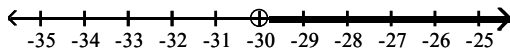
181) $-2(x + 5) + 15x < -5(-3x + 8) - 3x$



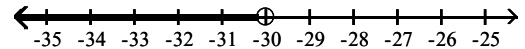
A) $(30, \infty)$



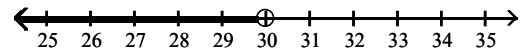
C) $(-30, \infty)$



B) $(-\infty, -30)$

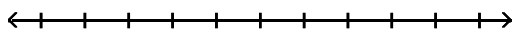


D) $(-\infty, 30)$

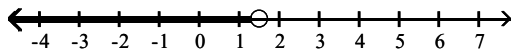


Answer: B

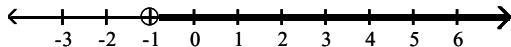
182) $\frac{1}{2}(x + 3) > \frac{1}{6}(7x + 3)$



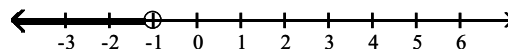
A) $\left(-\infty, \frac{3}{2}\right)$



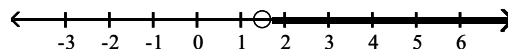
C) $(-1, \infty)$



B) $(-\infty, -1)$

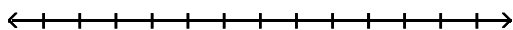


D) $\left(\frac{3}{2}, \infty\right)$

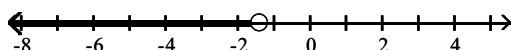


Answer: A

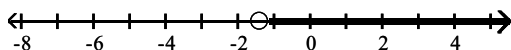
183) $\frac{2}{3}(4 + 5k) > \frac{1}{2}(5k + 3)$



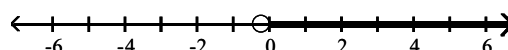
A) $\left(-\infty, -\frac{7}{5}\right)$



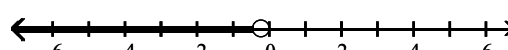
C) $\left(-\frac{7}{5}, \infty\right)$



B) $\left(-\frac{1}{5}, \infty\right)$



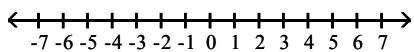
D) $\left(-\infty, -\frac{1}{5}\right)$



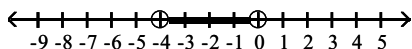
Answer: C

Solve the inequality, then graph the solution.

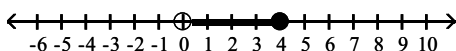
184) $0 < -4y \leq 16$



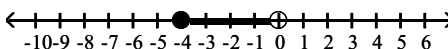
A) $(-4, 0)$



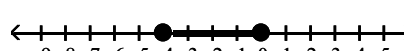
C) $(0, 4]$



B) $[-4, 0)$

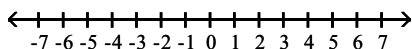


D) $[-4, 0]$

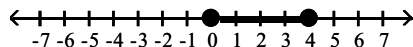


Answer: B

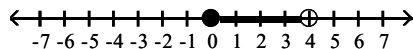
185) $2 < 5y + 2 \leq 22$



A) $[0, 4]$

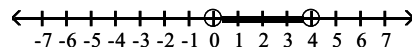


C) $[0, 4)$

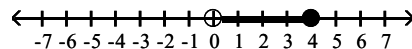


Answer: D

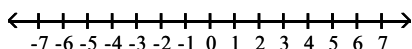
B) $(0, 4)$



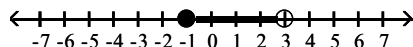
D) $(0, 4]$



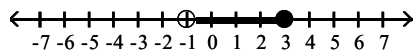
186) $-1 < -3a + 2 \leq 11$



A) $[-1, 3)$

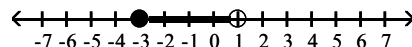


C) $(-1, 3]$

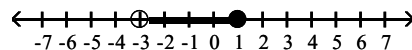


Answer: B

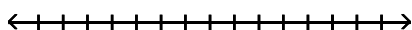
B) $[-3, 1)$



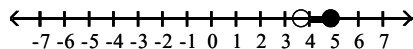
D) $(-3, 1]$



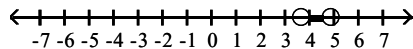
187) $10 < \frac{10x - 7}{3} < 14$



A) $\left(-\frac{49}{10}, \frac{37}{10}\right)$

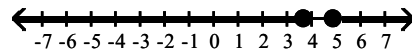


C) $\left(\frac{37}{10}, \frac{49}{10}\right)$

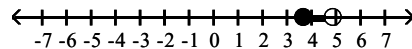


Answer: C

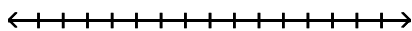
B) $\left(-\infty, \frac{37}{10}\right) \cup \left(\frac{49}{10}, \infty\right)$



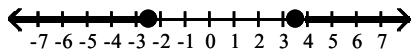
D) $\left[-\frac{37}{10}, \frac{49}{10}\right]$



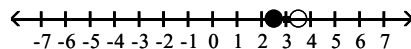
188) $-8 < \frac{4 - 8x}{3} \leq 8$



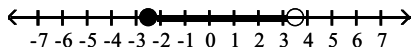
A) $\left(-\infty, -\frac{5}{2}\right] \cup \left[\frac{7}{2}, \infty\right)$



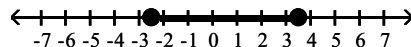
B) $\left[\frac{5}{2}, \frac{7}{2}\right)$



C) $\left[-\frac{5}{2}, \frac{7}{2}\right]$



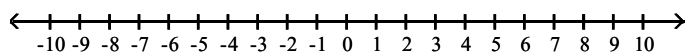
D) $\left[-\frac{5}{2}, \frac{7}{2}\right)$



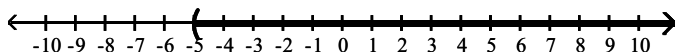
Answer: C

Solve the quadratic inequality. Graph the solution.

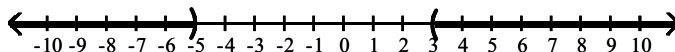
189) $(x - 3)(x + 5) > 0$



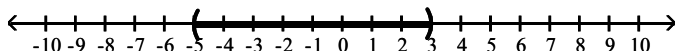
A) $(-5, \infty)$



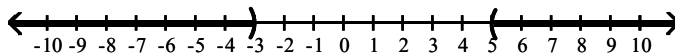
B) $(-\infty, -5) \cup (3, \infty)$



C) $(-5, 3)$



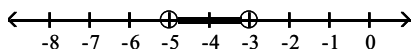
D) $(-\infty, -3) \cup (5, \infty)$



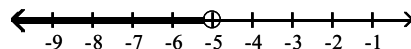
Answer: B

190) $p^2 + 8p + 15 > 0$

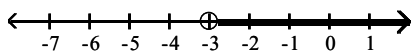
A) $(-5, -3)$



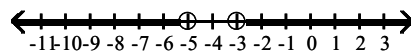
B) $(-\infty, -5)$



C) $(-3, \infty)$



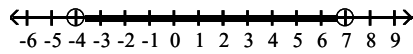
D) $(-\infty, -5) \cup (-3, \infty)$



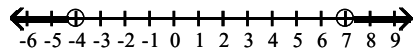
Answer: D

191) $s^2 - 3s - 28 < 0$

A) $(-4, 7)$

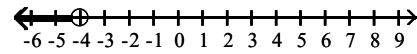


C) $(-\infty, -4) \cup (7, \infty)$

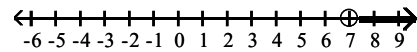


Answer: A

B) $(-\infty, -4)$

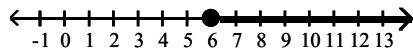


D) $(7, \infty)$

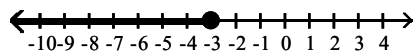


192) $t^2 - 3t - 18 \leq 0$

A) $[6, \infty)$

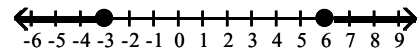


C) $(-\infty, -3]$

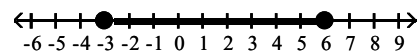


Answer: D

B) $(-\infty, -3] \cup [6, \infty)$

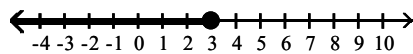


D) $[-3, 6]$

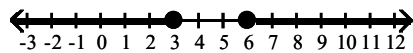


193) $v^2 - 9v + 18 \geq 0$

A) $(-\infty, 3]$

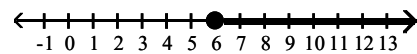


C) $(-\infty, 3] \cup [6, \infty)$

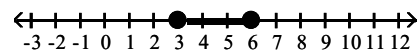


Answer: C

B) $[6, \infty)$

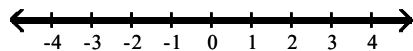


D) $[3, 6]$

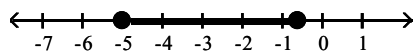


194) $5x^2 + 2x + 3 \geq 0$

A) $(-\infty, \infty)$

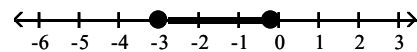


C) $\left[-5, -\frac{3}{5}\right]$



Answer: A

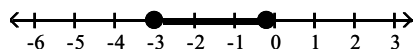
B) $\left[-3, -\frac{1}{5}\right]$



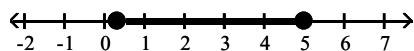
D) no solution

195) $-3x^2 + 7x - 5 \leq 0$

A) $\left[-3, -\frac{1}{5}\right]$



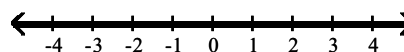
C) $\left[\frac{1}{3}, 5\right]$



Answer: D

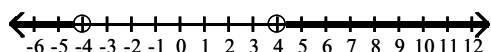
B) no solution

D) $(-\infty, \infty)$

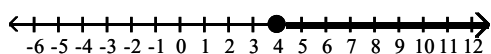


196) $x^2 \geq 16$

A) $(-\infty, -4) \cup (4, \infty)$

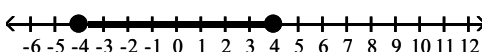


C) $[4, \infty)$

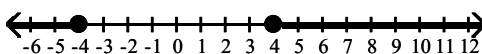


Answer: D

B) $[-4, 4]$

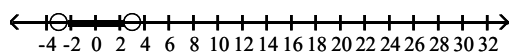


D) $(-\infty, -4] \cup [4, \infty)$

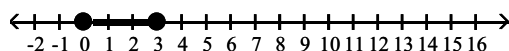


197) $y^2 - 3y < 0$

A) $(-3, 3)$

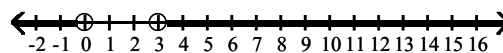


C) $[0, 3]$

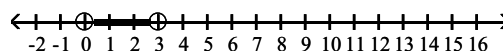


Answer: D

B) $(-\infty, 0) \cup (3, \infty)$



D) $(0, 3)$



Solve the inequality.

198) $\frac{-7}{-3x - 5} > 0$

A) $(0, \infty)$

B) $\left(-\infty, -\frac{3}{5}\right)$

C) $\left(-\infty, \frac{5}{3}\right)$

D) $\left(-\frac{5}{3}, \infty\right)$

Answer: D

199) $\frac{x + 24}{x + 9} < 4$

A) $(-\infty, -9) \cup (-4, \infty)$

B) $(-\infty, -4) \cup (9, \infty)$

C) $(-4, 9)$

D) $(-9, -4)$

Answer: A

200) $\frac{6}{x + 9} > \frac{1}{7}$

A) no solution

B) $(-\infty, -9) \cup (33, \infty)$

C) $(-33, 9)$

D) $(-9, 33)$

Answer: D

201) $\frac{4}{(x+3)^2} < 0$

A) $(1, \infty)$

B) $(-1, \infty)$

C) no solution

D) $(-\infty, \infty)$

Answer: C

202) $\frac{7}{x+7} > \frac{2}{x+7}$

A) $(-7, \infty)$

B) no solution

C) $(-\infty, \infty)$

D) $(-\infty, -7)$

Answer: A

203) $\frac{2x+9}{x-4} \geq 1$

A) $[-13, \infty)$

B) $(-\infty, -13] \cup (4, \infty)$

C) $(-\infty, -13] \cup [4, \infty)$

D) $[-13, 4)$

Answer: B

204) $\frac{x^2+x}{x^2-1} \leq 2$

A) $(-\infty, -1) \cup (-1, 1) \cup [2, \infty)$

B) $(-\infty, 1) \cup [2, \infty)$

C) $(1, 2]$

D) $(-\infty, -1) \cup [2, \infty)$

Answer: A

Evaluate the expression. Write your answer without exponents.

205) 3^{-4}

A) 81

B) -81

C) $\frac{1}{81}$

D) $\frac{1}{-81}$

Answer: C

206) $\frac{1}{2^{-3}}$

A) 8

B) 16

C) 6

D) 4

Answer: A

207) $\frac{5^{-2}}{2^{-3}}$

A) $\frac{25}{8}$

B) $\frac{125}{16}$

C) $\frac{8}{25}$

D) $\frac{16}{125}$

Answer: C

208) $\frac{1}{-10^{-2}}$

A) -100

B) -10

C) 10

D) 100

Answer: A

209) $(-4)^{-1}$

A) -4

B) $-\frac{1}{4}$

C) $\frac{1}{4}$

D) 4

Answer: B

210) $(-5)^{-2}$

A) $\frac{1}{25}$

B) 25

C) $\frac{1}{-25}$

D) -25

Answer: A

211) $-(-5^{-2})$

A) $\frac{1}{25}$

B) 25

C) -25

D) $-\frac{1}{25}$

Answer: A

212) 5^0

A) 0

B) -1

C) 5

D) 1

Answer: D

213) $(-5)^0$

A) 0

B) -1

C) -5

D) 1

Answer: D

214) $\left(\frac{1}{2}\right)^{-2}$

A) $\frac{1}{4}$

B) 2

C) 1

D) 4

Answer: D

Simplify the expression. If the expression contains any variables, assume that they represent positive real numbers. Write your answer with only positive exponents.

215) $\frac{8^7m \cdot 8^{-2}m}{8^{-9}m}$

A) $\frac{m}{8^{14}}$

B) $8^{14}m$

C) $8^{-4}m$

D) $\frac{m}{8^{-4}}$

Answer: B

216) $\frac{5^{-8}p \cdot 5^{-5}p}{5^7p^3}$

A) $\frac{1}{5^{20}p}$

B) $\frac{5^6}{p}$

C) $\frac{1}{5^6p}$

D) $5^{20}p$

Answer: A

$$217) \frac{243^7 \cdot 3^{-3}}{9^7}$$

A) 27^{18}

B) 1

C) 3^7

D) 3^{18}

Answer: D

$$218) \frac{(5x)^{12}}{x^{12}}$$

A) $\frac{1}{5}$

B) $\frac{5}{x}$

C) 5^{12}

D) 5

Answer: C

$$219) \frac{x^{-8}}{(6x)^{-8}}$$

A) 6^8

B) $6x$

C) $\frac{1}{6^8}$

D) 6

Answer: A

$$220) \frac{x^2(x^{-9})^{-9}}{(x^{-5})^{-5}}$$

A) x^{104}

B) x^{58}

C) $\frac{1}{x^{104}}$

D) x^{26}

Answer: B

$$221) \frac{x^{-2}(x^{-8})^4}{(x^{-5})^{-6}}$$

A) $\frac{1}{x^{64}}$

B) $\frac{1}{x^4}$

C) x^{64}

D) x^5

Answer: A

$$222) \left(\frac{x^{-4}y^5}{y^{-2}} \right)^{-2}$$

A) $\frac{y^{14}}{x^8}$

B) $\frac{1}{x^8y^{14}}$

C) $\frac{x^8}{y^{14}}$

D) $\frac{x^8}{y^{12}}$

Answer: C

$$223) \left(\frac{x^{-6}y^{-2}}{x^8y^{-6}} \right)^{1/2}$$

A) $\frac{y^2}{x^{14}}$

B) $\frac{y^2}{x^7}$

C) $\frac{x^7}{y^4}$

D) $\frac{1}{x^7y^2}$

Answer: B

Simplify the expression, writing the answer as a single term without negative exponents.

$$224) \frac{m^{-1} + z^{-1}}{m^{-1} - z^{-1}}$$

$$A) \frac{z + m}{z - m}$$

$$B) \frac{z + m}{m}$$

$$C) \frac{z - m}{z}$$

$$D) \frac{z + m}{z}$$

Answer: A

$$225) a^{-2} - b^{-2}$$

$$A) \frac{b - a}{ab}$$

$$B) \frac{b^2 - a^2}{ab^2}$$

$$C) \frac{b^2 - a^2}{a^2b^2}$$

$$D) \frac{b^2 + a^2}{a^2b^2}$$

Answer: C

$$226) (2k)^{-1} + 3m^{-1}$$

$$A) \frac{m + 6k}{2km}$$

$$B) \frac{m + 6k}{3m}$$

$$C) \frac{m + 6k}{2k}$$

$$D) \frac{m - 6k}{3km}$$

Answer: A

$$227) (a^{-1} + b^{-1})^{-1}$$

$$A) \frac{ab}{a}$$

$$B) \frac{ab}{a + b}$$

$$C) \frac{a + b}{ab}$$

$$D) \frac{ab}{a - b}$$

Answer: B

$$228) \frac{x^{-2}}{x^{-2} - y^{-2}}$$

$$A) \frac{y^2 - x^2}{y^2}$$

$$B) \frac{y}{y^2 - x^2}$$

$$C) \frac{y^2}{y^2 - x^2}$$

$$D) \frac{y^2}{y^2 + x^2}$$

Answer: C

$$229) \frac{-4a^{-1} - 6b^{-1}}{(-6ab)^{-1}}$$

$$A) \frac{5}{3}$$

$$B) \frac{-4b - 6a}{-6}$$

$$C) 24b + 36a$$

$$D) 36b + 24a$$

Answer: C

$$230) \frac{-6xy^{-1} + 9yx^{-1}}{-6x^2 + 9y^2}$$

$$A) \frac{1}{-54xy}$$

$$B) \frac{1}{xy}$$

$$C) 1$$

$$D) xy$$

Answer: B

$$231) (2a^{-1} - 7b^{-1})^{-1}$$

$$A) \frac{-7a + 2b}{ab}$$

$$B) \frac{-14ab}{-7a + 2b}$$

$$C) \frac{ab}{-7b + 2a}$$

$$D) \frac{ab}{2b - 7a}$$

Answer: D

$$232) \frac{(5m + 2n)^{-1}}{4m^{-2} - 25n^{-2}}$$

$$A) \frac{7}{4m^{-1} - 25n^{-1}}$$

$$C) \frac{100m^2n^2}{(2n + 5m)(2n - 5m)^2}$$

$$B) \frac{m^2n^2}{(2n + 5m)(2n - 5m)^2}$$

$$D) \frac{m^2n^2}{(2n + 5m)^2(2n - 5m)}$$

Answer: D

$$233) \left(\frac{x}{2}\right)^{-3} + \left(\frac{y}{5}\right)^{-1}$$

$$A) \frac{40 + x^3y}{8y}$$

$$B) \frac{8y + 5x^3}{40}$$

$$C) \frac{8y + 5x}{xy}$$

$$D) \frac{8y + 5x^3}{x^3y}$$

Answer: D

Evaluate the expression.

$$234) 576^{1/2}$$

$$A) 24$$

$$B) 12$$

$$C) 48$$

$$D) 96$$

Answer: A

$$235) 8^{1/3}$$

$$A) 2$$

$$B) 48$$

$$C) 6$$

$$D) 16$$

Answer: A

$$236) 4,096^{1/4}$$

$$A) 256$$

$$B) 8$$

$$C) 32$$

$$D) 32,768$$

Answer: B

$$237) -32^{1/5}$$

$$A) -2$$

$$B) -8$$

$$C) 16$$

$$D) 32$$

Answer: A

$$238) \left(\frac{49}{81}\right)^{1/2}$$

$$A) \frac{7}{10}$$

$$B) \frac{6}{9}$$

$$C) \frac{6}{10}$$

$$D) \frac{7}{9}$$

Answer: D

$$239) 27^{4/3}$$

$$A) 729$$

$$B) 81$$

$$C) 243$$

$$D) 2,187$$

Answer: B

$$240) 16^{5/4}$$

$$A) 256$$

$$B) 512$$

$$C) 32$$

$$D) 128$$

Answer: C

241) $32^{4/5}$

A) 512

B) 256

C) 128

D) 16

Answer: D

242) $8^{-2/3}$

A) $\frac{1}{2}$

B) -4

C) $-\frac{1}{4}$

D) $\frac{1}{4}$

Answer: D

243) $\left(\frac{27}{64}\right)^{-2/3}$

A) $\frac{16}{9}$

B) $-\frac{9}{16}$

C) $\frac{9}{16}$

D) $\frac{16}{27}$

Answer: A

Simplify the expression. Write the answer with only positive exponents. Assume that all variables represent positive real numbers.

244) $7a^{3/4} \cdot 7a^{-23/4}$

A) $\frac{7}{a^6}$

B) $\frac{a^5}{49}$

C) $7a^{-20}$

D) $\frac{49}{a^5}$

Answer: D

245) $\frac{x^{7/5} \cdot y^{3/2}}{x^{3/5} \cdot y^{-11/2}}$

A) x^4y^{14}

B) $\frac{x^{4/5}}{y^4}$

C) $x^{4/5}y^7$

D) $\frac{x^{7/3}}{y^{3/11}}$

Answer: C

246) $\frac{5^{-2/3} 5^5 x^{-5}}{5^{1/3} x^{-2}}$

A) $\frac{5^4}{x^3}$

B) $5^4 x^6$

C) $\frac{5^6}{x^7}$

D) $5 x^7$

Answer: A

247) $\frac{3 k^{-6} (3 k^{-2})^{-1}}{6 k^{3/2}}$

A) $-3k^{13}$

B) $\frac{1}{6 k^{11/2}}$

C) $-\frac{1}{6 k^{12}}$

D) $\frac{3}{k^{15/2}}$

Answer: B

$$248) \frac{2^{1/5}m^{-1}}{2^{-7/5}m^{-4}}$$

$$A) 2^{8/5}m^3$$

$$B) \frac{2^{8/5}}{m^3}$$

$$C) 4^{8/25}m^4$$

$$D) -2^{6/5}m^3$$

Answer: A

$$249) \frac{-5b^{-2}b^{1/4}}{b^{-7}}$$

$$A) \frac{b^{21/4}}{5}$$

$$B) -5b^{21/4}$$

$$C) -5b^{23/4}$$

$$D) \frac{-5}{b^{21/4}}$$

Answer: B

$$250) \frac{2^{1/5}x^{-8}}{2^{-9}x^{-9}}$$

$$A) 2^{44/5}x$$

$$B) \frac{2^{48/5}}{x}$$

$$C) 2^{46/5}x$$

$$D) \frac{x}{2^9}$$

Answer: C

$$251) \frac{x^{-4/5}y^{-1/3}z^{7/6}}{x^{-1/5}y^{7/3}z^{-5/6}}$$

$$A) \frac{z}{xy^{1/3}}$$

$$B) xy^{1/3}$$

$$C) \frac{z^2}{x^{3/5}y^{8/3}}$$

$$D) \frac{z^2}{x^{3/5}y^4}$$

Answer: C

$$252) \frac{m^{-2/3}n^{-2/5}p^{29/8}}{m^{7/3}n^{13/5}p^{-3/8}}$$

$$A) \frac{p^7}{m^{11/3}n^3}$$

$$B) \frac{p^4}{m^{8/3}n^3}$$

$$C) \frac{m^3}{n^3p^4}$$

$$D) \frac{p^4}{m^3n^3}$$

Answer: D

$$253) \frac{k^{-1/5} \cdot m^{-1/9} \cdot n^{3/7}}{k^{7/5} \cdot m^{-8/9} \cdot n^{-2/7}}$$

$$A) \frac{m^{7/9} \cdot n^{1/7}}{k^{8/5}}$$

$$B) \frac{m^{7/9} \cdot n^{5/7}}{k^{8/5}}$$

$$C) \frac{m^{7/9} \cdot n^{5/7}}{k^{6/5}}$$

$$D) \frac{n^{5/7}}{k^{6/5} \cdot m^{7/9}}$$

Answer: B

Factor the expression.

$$254) (y - 7)(m - 2) + (y - 7)(m - 5)$$

$$A) (y - 7)(m - 7)$$

$$B) (y - 7)(m + 7)$$

$$C) (y - 7)(m^2 - 7)$$

$$D) (y - 7)(2m - 7)$$

Answer: D

255) $(8q + 11)(6q + 8) + (8q + 11)(q - 8)$

A) $(16q + 22)(7q)$

B) $(8q + 11)(7q + 16)$

C) $(8q + 11)(7q - 16)$

D) $(8q + 11)(7q)$

Answer: D

256) $3(x + y)^3 - 6(x + y)^2 + 9(x + y)^4$

A) $3(x + y)[(x + y)^2 - 2(x + y) + 3(x + y)^3]$

B) $3(x + y)^2[x + y - 2 + 3(x + y)^2]$

C) $3(x + y)^3(-2 + 3x + 3y)$

D) $(x + y)^2[3x + 3y - 6 + 9(x + y)^2]$

Answer: B

257) $20(p + 3)^2 + 17(p + 3) + 3$

A) $(5p + 16)(4p + 15)$

B) $(5p + 6)(4p + 4)$

C) $(5p + 3)(4p + 1)$

D) $(5p + 18)(4p + 13)$

Answer: D

258) $8(m - 4)^2 - 6(m - 4) - 5$

A) $(4m + 5)(2m + 1)$

B) $(4m + 9)(2m + 5)$

C) $(4m + 17)(2m + 13)$

D) $(4m - 21)(2m - 7)$

Answer: D

259) $a^2(a + b)^2 - ab(a + b)^2 - 12b^2(a + b)^2$

A) $(a + b)^2(a - 3b)(a + 4b)$

B) $(a + b)^2(a - 4b)(a + 3b)$

C) $(a - 4b)(a + 3b)(a + b)$

D) $(a + b)^2(a - 4)(a + 3)$

Answer: B

260) $8x^2(x^2 + 2)^2 - 4x(5x^3 + 1)(x^2 + 2)$

A) $4x(x^2 + 2)(-5x^3 + 2x^2 + 3)$

B) $4x(x^2 + 2)(-3x^3 + 4x - 1)$

C) $4x(x^2 + 2)(-3x^3 + 4x + 1)$

D) $4x(x^2 + 2)^2(-3x^3 + 4x - 1)$

Answer: B

261) $9m^{1/2} + 3m^{-1/2}$

A) $m^{-1/2}(9m - 3)$

B) $m^{1/2}(9m + 3)$

C) $m^{-1/2}(9m^{1/2} + 3)$

D) $m^{-1/2}(9m + 3)$

Answer: D

262) $x(2x + 5)^2(x^2 - 6)^{-1/2} + 4(x^2 - 6)^{1/2}(2x + 5)$

A) $(2x + 5)(x^2 - 6)^{1/2}(6x^2 + 5x - 24)$

B) $(2x + 5)(x^2 - 6)^{-1/2}(4x^2 + 2x - 19)$

C) $(2x + 5)(x^2 - 6)^{-1/2}(6x^2 + 5x - 24)$

D) $(2x + 5)^2(x^2 - 6)^{-1/2}(4x^2 + x - 24)$

Answer: C

263) $(x - 7)^{-3/2} - (x - 7)^{-1/2} + (x - 7)^{1/2}$

A) $(x - 7)^{-3/2}(x^2 + 15x - 57)$

B) $(x - 7)^{3/2}(x^2 + 14x - 57)$

C) $(x - 7)^{-3/2}(x^2 - 15x + 57)$

D) $(x - 7)^{-3/2}(x^2 - 15x - 50)$

Answer: C

Simplify. Assume that all variables represent positive real numbers.

264) $\sqrt{96}$

A) $16\sqrt{6}$

B) 9

C) $4\sqrt{6}$

D) 4

Answer: C

265) $-\sqrt{125}$

A) 11

B) $-5\sqrt{5}$

C) 5

D) $-25\sqrt{5}$

Answer: B

266) $\sqrt[3]{135}$

A) $5\sqrt[3]{3}$

B) $3\sqrt[3]{5}$

C) 5

D) 11

Answer: B

267) $\sqrt[4]{2,592}$

A) $2\sqrt[4]{6}$

B) 50

C) $6\sqrt[4]{2}$

D) 7

Answer: C

268) $-\sqrt[4]{1,280}$

A) -5

B) $-4\sqrt[4]{5}$

C) 5

D) $-5\sqrt[4]{4}$

Answer: B

269) $\sqrt[3]{-125}$

A) 25

B) -25

C) -5

D) 5

Answer: C

270) $\sqrt{343x^2}$

A) $343x$

B) $7x\sqrt{7}$

C) $7x^2\sqrt{7}$

D) $7\sqrt{7x}$

Answer: B

271) $\sqrt{48k^7q^8}$

A) $(4k^3q^4)\sqrt{3k}$

B) $(4q^4)\sqrt{3k^7}$

C) $(4k^3q^4)\sqrt[3]{3}$

D) $(4k^7q^8)\sqrt{3k}$

Answer: A

272) $\sqrt[3]{1,000x^4y^5}$

A) $10xy(\sqrt[2]{xy^2})$

B) $10xy(\sqrt[3]{xy^2})$

C) $3xy(\sqrt[3]{xy^2})$

D) $10xy(\sqrt[3]{xy})$

Answer: B

273) $\sqrt[3]{-8a^8b^5}$

A) $2(\sqrt[2]{a^2b^2})$

B) $2ab(\sqrt[3]{a^3b^3})$

C) $2ab(\sqrt[3]{a^2b^2})$

D) $-2a^2b(\sqrt[3]{a^2b^2})$

Answer: D

Simplify the expression by removing as many factors as possible from under the radical. Assume that all variables represent positive real numbers.

274) $\sqrt{12} \cdot \sqrt{12}$

A) 144

B) $\sqrt{144}$

C) 12

D) 24

Answer: C

275) $\sqrt{2} \cdot \sqrt{18}$

A) 12

B) 36

C) 6

D) 72

Answer: C

276) $\sqrt{28} \cdot \sqrt{7}$

A) $2\sqrt{7}$

B) $7\sqrt{2}$

C) 196

D) 14

Answer: D

277) $\sqrt{5} \cdot \sqrt{10}$

A) $25\sqrt{2}$

B) $2\sqrt{5}$

C) 10

D) $5\sqrt{2}$

Answer: D

278) $\sqrt{15} \cdot \sqrt{75}$

A) $25\sqrt{3}$

B) $-25\sqrt{3}$

C) $-15\sqrt{5}$

D) $15\sqrt{5}$

Answer: D

279) $\sqrt{11x^3} \cdot \sqrt{11x^5}$

A) $\sqrt{11x^4}$

B) $11x^4$

C) $\sqrt{121x^8}$

D) $x^4\sqrt{22}$

Answer: B

280) $\sqrt[7]{u} \cdot \sqrt{u}$

A) $\sqrt[14]{u^9}$

B) $\sqrt[7]{u^2}$

C) $\sqrt[9]{u^2}$

D) $\sqrt[9]{2u}$

Answer: A

281) $\sqrt[7]{x} \cdot \sqrt[4]{x^3}$

A) $\sqrt[11]{x^4}$

B) $\sqrt[28]{x^{25}}$

C) $\sqrt[28]{x^4}$

D) $\sqrt[11]{x^3}$

Answer: B

282) $\sqrt{m} \cdot \sqrt[4]{m^{13}}$

A) $\sqrt[4]{m}$

B) $m^6\sqrt[4]{m}$

C) $m^6\sqrt{m}$

D) $m^3\sqrt[4]{m^3}$

Answer: D

Perform the indicated operations and simplify. Assume all variables represent positive real numbers.

283) $-8\sqrt{98} + 4\sqrt{18} - 5\sqrt{32}$

A) $-64\sqrt{2}$

B) $416\sqrt{2}$

C) $-8\sqrt{2}$

D) $-416\sqrt{2}$

Answer: A

284) $\sqrt{18} - 6\sqrt{32} - 4\sqrt{8}$

A) $29\sqrt{2}$

B) $-32\sqrt{2}$

C) $22\sqrt{2}$

D) $-29\sqrt{2}$

Answer: D

285) $\sqrt{6} + 5\sqrt{24} - 4\sqrt{54}$

A) $-1\sqrt{6}$

B) $1\sqrt{84}$

C) $1\sqrt{6}$

D) $-1\sqrt{84}$

Answer: A

286) $\sqrt{3a} - 3\sqrt{12a} - 6\sqrt{27a}$

A) $-23\sqrt{3a}$

B) $-9\sqrt{3a}$

C) $-9\sqrt{42a}$

D) $-23\sqrt{42a}$

Answer: A

287) $\sqrt{5x^2} + 4\sqrt{125x^2} + 7\sqrt{125x^2}$

A) $11x\sqrt{186}$

B) $11x\sqrt{5}$

C) $56x\sqrt{5}$

D) $56x\sqrt{186}$

Answer: C

288) $\sqrt{2} - 4\sqrt{128} - 5\sqrt{98}$

A) $3\sqrt{2}$

B) $-66\sqrt{2}$

C) $66\sqrt{2}$

D) $-3\sqrt{2}$

Answer: B

289) $6\sqrt[3]{3} + 14\sqrt[3]{3}$

A) $8\sqrt[3]{3}$

B) $20\sqrt[3]{3}$

C) $20\sqrt[3]{6}$

D) $20\sqrt[3]{9}$

Answer: B

290) $9\sqrt[3]{2} - 4\sqrt[3]{128}$

A) $5\sqrt[3]{2}$

B) $7\sqrt[3]{2}$

C) $-7\sqrt[3]{2}$

D) $9\sqrt[3]{2} - 4\sqrt[3]{128}$

Answer: C

291) $11\sqrt[4]{x^7} - 5x\sqrt[4]{x^3}$

A) $11\sqrt[4]{x^7} - 5x\sqrt[4]{x^3}$

B) $16\sqrt[4]{x^3}$

C) $6x\sqrt[4]{x^7}$

D) $6x\sqrt[4]{x^3}$

Answer: D

292) $3\sqrt[3]{a} + \sqrt[3]{64a}$

A) $4\sqrt[3]{64a}$

B) $12\sqrt[3]{a}$

C) $3\sqrt[3]{a} + \sqrt[3]{64a}$

D) $7\sqrt[3]{a}$

Answer: D

Simplify the root, if possible.

293) $\sqrt{9x^2 + 24x + 16}$

A) cannot be simplified

B) $(3x + 4)^2$

C) $|3x + 4|$

D) $3x + 4$

Answer: C

294) $\sqrt{4m^2 + 49n^2}$

A) $2m + 7n$

C) cannot be simplified

Answer: C

B) $|2m + 7n|$

D) $(2m + 7n)^2$

295) $\sqrt{z^2 + 2z + 1}$

A) $|z + 1|$

Answer: A

B) $|z| + 1$

C) $z + 1$

D) $-z - 1$

Rationalize the denominator. Assume that all radicands represent positive real numbers.

296) $-\sqrt{\frac{25}{24}}$

A) $-5\sqrt{6}$

Answer: B

B) $-\frac{5\sqrt{6}}{12}$

C) $-\frac{5\sqrt{6}}{6}$

D) -24

297) $\frac{5}{9 - \sqrt{5}}$

A) $\frac{5}{9} - \frac{5}{\sqrt{5}}$

Answer: B

B) $\frac{45 + 5\sqrt{5}}{76}$

C) $\frac{45 + 5\sqrt{5}}{-4}$

D) $\frac{45 - 5\sqrt{5}}{76}$

298) $\frac{\sqrt{7}}{\sqrt{2} + 5}$

A) $\frac{\sqrt{14} - 5\sqrt{7}}{-23}$

Answer: A

B) $\frac{\sqrt{14} + 5\sqrt{7}}{-23}$

C) $\frac{3\sqrt{14} + 27}{10}$

D) $\frac{\sqrt{14} - 5\sqrt{7}}{7}$

299) $\frac{1 - \sqrt{10}}{1 + \sqrt{10}}$

A) $\frac{11 - 2\sqrt{10}}{-9}$

Answer: A

B) $\frac{-9 - 2\sqrt{10}}{11}$

C) 1

D) $\frac{11 + 2\sqrt{10}}{-9}$

300) $\frac{\sqrt{7}}{7\sqrt{5} - \sqrt{7}}$

A) $\frac{1}{34}(\sqrt{35} + 1)$

Answer: A

B) $\frac{1}{34}(\sqrt{5} + 1)$

C) $\frac{1}{34}(\sqrt{35} - 1)$

D) $\frac{1}{36}(\sqrt{35} + 1)$

301) $\frac{4}{\sqrt{x} + 4}$

A) $\frac{16}{x + 16}$

Answer: C

B) $\frac{4\sqrt{x} + 16}{x + 16}$

C) $\frac{4\sqrt{x} - 16}{x - 16}$

D) $\frac{16}{x - 16}$

$$302) \frac{4\sqrt{x} + 1}{3\sqrt{x} - 5}$$

$$A) \frac{12x + 23\sqrt{x} + 5}{9x - 25}$$

$$B) \frac{4x + 23\sqrt{x} + 5}{9x - 25}$$

$$C) \frac{16x + 1}{9x - 25}$$

$$D) \frac{12x - 5}{9x - 25}$$

Answer: A

$$303) \frac{4x}{\sqrt{5x} - 7}$$

$$A) \frac{4x\sqrt{5x} - 7}{5x - 7}$$

$$B) \frac{4x\sqrt{5x} - 7}{5x + 7}$$

$$C) \frac{16x^2}{5x - 7}$$

$$D) \frac{16x^2\sqrt{5x} + 7}{5x + 7}$$

Answer: A

$$304) \frac{-7}{\sqrt{3}}$$

$$A) -\frac{7}{3}$$

$$B) \frac{-7\sqrt{7}}{3}$$

$$C) -7\sqrt{3}$$

$$D) \frac{-7\sqrt{3}}{3}$$

Answer: D

$$305) \frac{\sqrt{y} - \sqrt{y+3}}{\sqrt{y} + \sqrt{y+3}}$$

$$A) \frac{-2y - 3 + 2\sqrt{y(y+3)}}{3}$$

$$B) \frac{-2y - 3}{3}$$

$$C) \frac{2y + 3 - 2\sqrt{y(y+3)}}{3}$$

$$D) \frac{-3}{2y + 3}$$

Answer: A

Rationalize the numerator. Assume that all radicands represent positive real numbers.

$$306) \frac{\sqrt{5} + 2}{2}$$

$$A) \frac{2}{2\sqrt{5} - 1}$$

$$B) \frac{5}{\sqrt{5} - 1}$$

$$C) \frac{-5}{\sqrt{5}}$$

$$D) \frac{1}{2\sqrt{5} - 4}$$

Answer: D

$$307) \frac{8 - \sqrt{3}}{10 - \sqrt{10}}$$

$$A) \frac{61}{80 + 10\sqrt{3} - 8\sqrt{10} - \sqrt{30}}$$

$$B) \frac{61}{80 + 10\sqrt{3} - 8\sqrt{10} - 30}$$

$$C) \frac{61}{80 - 10\sqrt{3} - 8\sqrt{10} - \sqrt{30}}$$

$$D) \frac{61}{80 + 2\sqrt{-7} - 30}$$

Answer: A

$$308) \frac{8 + \sqrt{6}}{4 + \sqrt{7}}$$

$$A) \frac{58}{32 - 12\sqrt{13} - 42}$$

$$B) \frac{58}{32 + 4\sqrt{6} - 8\sqrt{7} - \sqrt{42}}$$

$$C) \frac{58}{32 - 4\sqrt{6} + 8\sqrt{7} - \sqrt{42}}$$

$$D) \frac{58}{32 - 4\sqrt{6} - 8\sqrt{7} - 42}$$

Answer: C

$$309) \frac{\sqrt{x} + \sqrt{y}}{8x}$$

$$A) - \frac{y}{8\sqrt{x} - 8\sqrt{y}}$$

$$B) \frac{x + y}{-8x\sqrt{x} + 8x\sqrt{y}}$$

$$C) \frac{x - y}{8x\sqrt{x} - 8x\sqrt{y}}$$

$$D) \frac{8x - 8y}{x\sqrt{x} - x\sqrt{y}}$$

Answer: C

$$310) \frac{\sqrt{m} - \sqrt{n}}{5 + \sqrt{n}}$$

$$A) \frac{m - n}{5\sqrt{m} + 5\sqrt{n} + \sqrt{mn} + n}$$

$$B) \frac{m - n}{5\sqrt{m} + n}$$

$$C) \frac{m + n}{5\sqrt{m} - 5\sqrt{n} - \sqrt{mn} - n}$$

$$D) \frac{m - 1}{5\sqrt{m} + 5\sqrt{n} + \sqrt{mn}}$$

Answer: A

Answer Key

Testname: UNTITLED1

- 1) B
- 2) C
- 3) D
- 4) B
- 5) D
- 6) A
- 7) C
- 8) B
- 9) B
- 10) B
- 11) A
- 12) D
- 13) D
- 14) B
- 15) A
- 16) C
- 17) B
- 18) D
- 19) D
- 20) B
- 21) D
- 22) C
- 23) D
- 24) C
- 25) D
- 26) B
- 27) B
- 28) C
- 29) A
- 30) A
- 31) A
- 32) B
- 33) C
- 34) D
- 35) B
- 36) A
- 37) B
- 38) C
- 39) B
- 40) A
- 41) B
- 42) C
- 43) A
- 44) C
- 45) D
- 46) C
- 47) A
- 48) C
- 49) D
- 50) D

Answer Key

Testname: UNTITLED1

- 51) D
- 52) B
- 53) C
- 54) C
- 55) B
- 56) B
- 57) B
- 58) B
- 59) D
- 60) B
- 61) C
- 62) B
- 63) A
- 64) D
- 65) C
- 66) B
- 67) A
- 68) A
- 69) B
- 70) A
- 71) D
- 72) C
- 73) A
- 74) C
- 75) D
- 76) A
- 77) D
- 78) A
- 79) D
- 80) B
- 81) D
- 82) C
- 83) D
- 84) C
- 85) B
- 86) D
- 87) C
- 88) C
- 89) A
- 90) C
- 91) C
- 92) D
- 93) D
- 94) B
- 95) B
- 96) A
- 97) B
- 98) C
- 99) B
- 100) D

Answer Key

Testname: UNTITLED1

- 101) A
- 102) C
- 103) C
- 104) D
- 105) C
- 106) B
- 107) D
- 108) B
- 109) C
- 110) D
- 111) C
- 112) D
- 113) D
- 114) D
- 115) D
- 116) A
- 117) A
- 118) C
- 119) B
- 120) A
- 121) D
- 122) B
- 123) A
- 124) B
- 125) B
- 126) A
- 127) B
- 128) A
- 129) C
- 130) B
- 131) C
- 132) A
- 133) A
- 134) B
- 135) D
- 136) D
- 137) A
- 138) B
- 139) D
- 140) B
- 141) D
- 142) D
- 143) D
- 144) C
- 145) D
- 146) D
- 147) C
- 148) D
- 149) D
- 150) C

Answer Key

Testname: UNTITLED1

- 151) A
- 152) A
- 153) B
- 154) D
- 155) B
- 156) B
- 157) B
- 158) C
- 159) B
- 160) C
- 161) A
- 162) B
- 163) B
- 164) B
- 165) D
- 166) C
- 167) C
- 168) D
- 169) B
- 170) A
- 171) C
- 172) D
- 173) C
- 174) D
- 175) D
- 176) A
- 177) B
- 178) A
- 179) C
- 180) A
- 181) B
- 182) A
- 183) C
- 184) B
- 185) D
- 186) B
- 187) C
- 188) C
- 189) B
- 190) D
- 191) A
- 192) D
- 193) C
- 194) A
- 195) D
- 196) D
- 197) D
- 198) D
- 199) A
- 200) D

Answer Key

Testname: UNTITLED1

- 201) C
- 202) A
- 203) B
- 204) A
- 205) C
- 206) A
- 207) C
- 208) A
- 209) B
- 210) A
- 211) A
- 212) D
- 213) D
- 214) D
- 215) B
- 216) A
- 217) D
- 218) C
- 219) A
- 220) B
- 221) A
- 222) C
- 223) B
- 224) A
- 225) C
- 226) A
- 227) B
- 228) C
- 229) C
- 230) B
- 231) D
- 232) D
- 233) D
- 234) A
- 235) A
- 236) B
- 237) A
- 238) D
- 239) B
- 240) C
- 241) D
- 242) D
- 243) A
- 244) D
- 245) C
- 246) A
- 247) B
- 248) A
- 249) B
- 250) C

Answer Key

Testname: UNTITLED1

- 251) C
- 252) D
- 253) B
- 254) D
- 255) D
- 256) B
- 257) D
- 258) D
- 259) B
- 260) B
- 261) D
- 262) C
- 263) C
- 264) C
- 265) B
- 266) B
- 267) C
- 268) B
- 269) C
- 270) B
- 271) A
- 272) B
- 273) D
- 274) C
- 275) C
- 276) D
- 277) D
- 278) D
- 279) B
- 280) A
- 281) B
- 282) D
- 283) A
- 284) D
- 285) A
- 286) A
- 287) C
- 288) B
- 289) B
- 290) C
- 291) D
- 292) D
- 293) C
- 294) C
- 295) A
- 296) B
- 297) B
- 298) A
- 299) A
- 300) A

Answer Key

Testname: UNTITLED1

301) C

302) A

303) A

304) D

305) A

306) D

307) A

308) C

309) C

310) A