

Review for Test #2 (B)

- ___ 1. Find the length of the line segment between the given points.

$$P_1(x_1, y_1) \text{ and } P_2(x_2, y_2)$$

- A) $\sqrt{(x_2 - x_1) + (y_2 - y_1)}$
 B) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
 C) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
 D) $\sqrt{(x_2 + x_1)^2 + (y_2 + y_1)^2}$
 E) $\sqrt{(x_2 + x_1)^2 + (y_2 + y_1)^2}$

- ___ 2. Find the midpoint of the line segment between the given points.

$$P_1(7,3) \text{ and } P_2(10,5)$$

- A) $\left(-\frac{3}{2}, -1\right)$ B) $\left(5, \frac{8}{2}\right)$ C) $\left(-\frac{3}{2}, -1\right)$ D) $\left(\frac{17}{2}, 4\right)$ E) $\left(\frac{17}{2}, 4\right)$

- ___ 3. The table below shows the average price per gallon of gasoline in the United States each year from 1990 to 2004. Find the average rate of change per year in the price of a gallon of gasoline from 1992 to 2001. Round your answer to three decimal places.

Year	Price per Gallon
1990	\$1.16
1991	\$1.14
1992	\$1.13
1993	\$1.11
1994	\$1.11
1995	\$1.15
1996	\$1.23
1997	\$1.23
1998	\$1.06
1999	\$1.17
2000	\$1.51
2001	\$1.46
2002	\$1.36
2003	\$1.59
2004	\$1.88

- A) \$0.037 per year
 B) \$0.330 per year
 C) \$0.288 per year
 D) \$0.129 per year
 E) \$0.165 per year
- ___ 4. State whether the following relation is a function.
 $\{(-5,1), (-2,1), (1,1), (2,1), (3,1)\}$

- A) Function B) Not a function C) Insufficient information

___ 5. Find the domain of the function.

$$\{(-3,1),(-2,4),(2,7),(4,-7)\}$$

- A) $\{-7, 1, 4, 7\}$ B) $\{-3, -2, 2, 4\}$ C) $\{-3, 1, -2, 4\}$ D) $\{2, 7, 4, -7\}$ E) $\{-2, -7, -3, 4\}$

___ 6. Find the range of the function.

$$\{(-5,2),(-1,4),(1,8),(2,-8)\}$$

- A) $\{1, 8, 2, -8\}$ B) $\{-5, 2, -1, 4\}$ C) $\{8, 1, -4, -8\}$ D) $\{-8, 2, 4, 8\}$ E) $\{-5, -1, 1, 2\}$

___ 7. State whether the following relation is a function.

$$\{(1,4),(5,5),(7,9),(1,-3),(5,-4)\}$$

- A) Function B) Not a function C) Insufficient information

___ 8. Given the function $f(x) = 2x^2 - 2x - 3$, find $f(3)$.

- A) -3 B) 12 C) 9 D) -6 E) 27

___ 9. Find the value of $s(t) = -16t^2 + 96t$ when $t = 2$.

- A) 256 B) 160 C) 224 D) 128 E) 180

___ 10. Find the range of the function defined by the equation and the given domain.

$$f(x) = 6x^2 - 6x + 6; D = \{-8, -4, 0, 8\}$$

- A) $\{438, 126, 6, 342\}$ D) all numbers
B) $\{-8, -4, 0, 8\}$ E) $\{-8, 438, (-4, 126), (0, 6), (8, 342)\}$
C) $\{6\}$

___ 11. Add the following. Use a vertical format.

$$(2x^2 + 9x + 5) + (5x^2 + 6x - 7)$$

- A) $7x^2 + 9x - 2$ D) $7x^2 + 15x - 2$
B) $7x^2 + 15x + 2$ E) $7x^2 + 15x + 12$
C) $7x + 15x^2 - 2$

___ 12. Add the following. Use a horizontal format.

$$(-9x^2 + 5x + 2) + (5x^2 + 4x - 6)$$

- A) $-4x^2 + x - 4$ D) $-4x^2 + 9x - 4$
B) $-4x^2 + 9x + 4$ E) $-4x^2 + x + 8$
C) $-4x + 9x^2 - 4$

___ 13. Subtract the following. Use a vertical format.

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

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

D) $2x^2 + 4x - 7$

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

E) $2x^2 + 10x - 7$

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

___ 14. Subtract. Use a vertical format.

$$(-n^2 + 4n) - (-n^2 + 3n)$$

A) $-2n^2 + 7n$ B) $-2n^2 + n$ C) $-n^2 + n$ D) $7n$ E) n

___ 15. Simplify: $(-4x^9)(-5x^2)$.

A) $-9x^{11}$ B) $20x^{18}$ C) $20x^{11}$ D) $-9x^{18}$ E) $20x^7$

___ 16. Simplify:

$$(-5x^5z^3)(-2x^7z^2)$$

A) $-7x^{12}z^5$ B) $10x^{12}z^5$ C) $-10x^{35}z^6$ D) $7x^{12}z^5$ E) $10x^{35}z^6$

___ 17. Multiply.

$$(-5y^3z)(-4y^2z^2)(-yz^4)$$

A) $-10y^6z^7$ B) $-20y^6z^8$ C) $20y^6z^7$ D) $-20y^6z^7$ E) $20y^6z^8$

___ 18. Simplify: $(y^8)^9$.

A) y^{72} B) y^{17} C) y^{16} D) y^8 E) y^9

___ 19. Simplify: $(-y^8)^6$.

A) y^{48} B) y^{14} C) $-y^{48}$ D) $-y^{14}$ E) y^2

___ 20. Simplify:

$$(x^4z^3)^6$$

A) $x^{24}z^6$ B) $x^{24}z^{18}$ C) x^6z^6 D) $x^{10}z^{18}$ E) $x^{24}z^9$

___ 21. Simplify: $(-x^5k^3)^6$.

- A) $x^{11}k^9$ B) $x^{30}k^{18}$ C) $x^{30}k^9$ D) $x^{11}k^{18}$ E) $-x^{30}k^3$

___ 22. Simplify:

$$y^n \cdot y^{5n}$$

- A) y^{5n} B) y^{6n^2} C) y^{5n^2} D) y^{6n} E) $2y^{6n}$

___ 23. Multiply: $-z(z+6)$.

- A) $-z^2+6z$ B) $-z^2+6$ C) $-z-6z$ D) $-z^2-6z$ E) z^2+6

___ 24. Multiply.

$$-8s^2(-8s+6s^4)$$

- A) $64s^3+6s^4$ B) $64s^3-48s^6$ C) $64s^2-48s^8$ D) $64s^2+48s^8$ E) $64s^3+48s^6$

___ 25. Multiply: $k^4(3k^2-3k+7)$.

- A) $3k^6-3k^5+7k^4$ D) $3k^8-3k^4+7$
B) $3k^8-3k^4+7k^4$ E) $3k^6-3k^4+7k^4$
C) $3k^6-3k+7$

___ 26. Multiply: $(x^2-5x+6)(x-2)$.

- A) $x^3-7x^2+16x-12$ D) $x^3-7x^2+10x-12$
B) $x^3-3x^2+16x-12$ E) $x^3-3x^2+16x+4$
C) $x^3-10x^2+11x-12$

___ 27. Multiply: $(3y^3+4y^2+3)(3y-1)$.

- A) $9y^4+12y^3-4y^2+3y-4$ D) $9y^4+6y^3-4y^2+9y-4$
B) $9y^4+9y^3-4y^2+9y-3$ E) $6y^4+15y^3-4y^2+6y-3$
C) $6y^4+9y^3-4y^2+6y-3$

___ 28. Multiply:

$$(6y^3 + 4y^2 + 5)(5y - 1)$$

A) $30y^4 - 14y^3 + 4y^2 + 25y - 5$

B) $30y^4 + 14y^3 - 4y^2 + 25y - 5$

C) $30y^4 + 14y^3 + 4y^2 + 25y - 5$

D) $30y^4 - 14y^3 - 4y^2 + 25y - 5$

E) $30y^4 + 14y^3 + 4y^2 - 25y - 5$

___ 29. Multiply: $(x + 6)(x + 5)$.

A) $x^2 + 11x + 30$

B) $x^2 + 30x + 11$

C) $x^2 + 6x + 11$

D) $x^2 + 5x + 6$

E) $x^2 + 10x + 36$

___ 30. Multiply: $(a - 2)(a - 4)$.

A) $a^2 - 6a + 8$ B) $a^2 + 6a - 4$ C) $a^2 + 8$ D) $a^2 - 6a - 8$ E) $a^2 - 2a + 8$

___ 31. Multiply: $(9x - 2)(x - 6)$.

A) $9x^2 - 52x + 12$

B) $9x^2 - 56x + 12$

C) $9x^2 + 54x + 8$

D) $9x^2 - 17x - 6$

E) $9x^2 + 8x + 8$

___ 32. Multiply:

$$(a - 6b)(2a + 4b)$$

A) $2a^2 + 8ab - 24b^2$

B) $2a^2 - 8ab + 24b^2$

C) $2a^2 - 12ab - 24ab^2$

D) $2a^2 - 8ab - 24b^2$

E) $2a^2 + 4ab - 24b^2$

___ 33. Multiply:

$$(2a + 4b)(a - 5b)$$

A) $2a^2 + 6ab - 20b^2$

B) $2a^2 - 6ab + 20b^2$

C) $2a^2 + 4ab - 20b^2$

D) $2a^2 - 6ab - 20b^2$

E) $2a^2 - 10ab - 20b^2$

___ 34. Multiply: $(5z + 4)(5z - 4)$.

A) $25z^2 - 16$

D) $25z^2 - 8$

B) $25z^2 + 20z - 16$

E) $25z^2 + 20z + 16$

C) $25z^2 + 16$

___ 35. Multiply: $(x + 6)(x - 6)$.

A) $x^2 + 36$

B) $x^2 + 12x - 36$

C) $x^2 - 36$

D) $x^2 - 12x + 36$

E) $x^2 - 12$

___ 36. Multiply: $(4p - 5)^2$.

A) $16p^2 - 25$

D) $16p^2 - 20p - 25$

B) $16p^2 + 40p + 25$

E) $16p^2 + 25$

C) $16p^2 - 40p + 25$

___ 37. Multiply: $(v - 5)^2$.

A) $v^2 - 25$

B) $v^2 - 10v + 25$

C) $v^2 + 10v + 25$

D) $v^2 - 10v - 25$

E) $v^2 + 25$

___ 38. Multiply: $(2x - 3y)^2$.

A) $4x^2 - 9y^2$

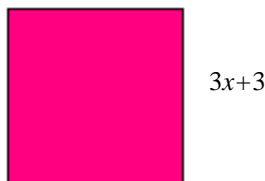
D) $4x^2 - 12xy + 9y^2$

B) $4x^2 + 6xy + 9y^2$

E) $4x^2 + 9y^2$

C) $4x^2 - 6xy + 9y^2$

___ 39. The length of a side of a square is $(3x+3)$ km. Find the area of the square in terms of the variable x .



A) $9x^2 - 18x + 9 \text{ km}^2$

D) $9x^2 + 9 \text{ km}^2$

B) $9x^2 + 18x + 9 \text{ km}^2$

E) $9x^2 - 18x - 9 \text{ km}^2$

C) $9x^2 + 18x - 9 \text{ km}^2$

___ 40. Evaluate: $\frac{4^{-4}}{4}$.

- A) $\frac{1}{1024}$ B) 1024 C) $\frac{1}{16}$ D) -4 E) 16

___ 41. Simplify: $\frac{15w^6}{35w^4}$.

- A) $\frac{7}{3}w$ B) $\frac{3}{7}w^2$ C) $\frac{7}{3}w^2$ D) $\frac{3}{7}w^{10}$ E) $\frac{3}{7}w^{24}$

___ 42. Simplify: $3x^{-5}$.

- A) $\frac{1}{3x^5}$ B) $3x^5$ C) $-3x^5$ D) $\frac{3}{x^5}$ E) $\frac{5}{3x}$

___ 43. Simplify: $\frac{3c^{-2}y^{-5}}{10c^8y^9}$.

- A) $\frac{3}{10}c^{10}y^{14}$ B) $\frac{3}{10c^{10}y^{14}}$ C) $\frac{3}{10c^{16}y^{45}}$ D) $\frac{3}{10c^6y^4}$ E) $\frac{3y^{14}}{10c^{10}}$

___ 44. Write the number 0.0059 in scientific notation.

- A) 0.59×10^{-2} B) 5.9×10^{-2} C) 5.9×10^{-3} D) 59×10^{-4} E) 5.9×10^{-5}

___ 45. Write the number 0.00044 in scientific notation.

- A) 4.4×10^{-7} B) 4.4×10^{-3} C) 4.4×10^{-4} D) 4.4×10^{-5} E) 4.4×10^{-6}

___ 46. Write the number 5.7×10^{10} in decimal notation.

- A) 57,000,000,000 B) 57,000 C) 57,000,000 D) 57,000,000,000,000 E) 57,000,000,000,000,000

___ 47. Write the mass of Pluto, which is approximately 14,000,000,000,000,000,000 kg, in scientific notation.

- A) 1.4×10^{19} B) 1.4×10^{23} C) 1.4×10^{21} D) 1.4×10^{22} E) 1.4×10^{20}

___ 48. Factor: $2 - 6y^2$.

- A) $2(3y^2 + 1)$ B) $2(y^2 + 6)$ C) $2(3 - y^2)$ D) $6(2 - y^2)$ E) $2(1 - 3y^2)$

___ 49. Factor:

$$6y^4 - 30y^3 + 12y^2$$

- A) $6y(y^3 - 5y + 3)$ D) $6y^2(y^2 - 5y + 2)$
B) $6y(5y^3 - y + 2)$ E) $6y^2(y^2 + 5y + 2)$
C) $6y^2(y^2 - 30y + 2)$

___ 50. Factor:

$$5a^2b^2 - 20ab^2 + 10b^2$$

- A) $5b^2(a^2 - 4a + 2)$ D) $5b^2(a^2 - 20a - 2)$
B) $5b^2(a^2 - 4ab + 2b)$ E) $5b^2(a^2 + 4a + 2)$
C) $5b^2(a^2 - 4ab + 2)$

___ 51. Factor: $6a^2b^2 - 24ab^2 + 12b^2$.

- A) $6b^2(a^2 - 4a + 2)$ D) $6b(a^2b - 24ab - 2b)$
B) $6b^2(a^2 - 4ab + 2b)$ E) $6b^2(a^2 + 4a + 2)$
C) $6ab(ab - 4b + 2)$

___ 52. Factor:

$$t(b+8) + 5(b+8)$$

- A) $(t+5)(b+t)$ D) $(t+5)(b+8)$
B) $(t+b)(b+8)$ E) $(t+8)(b+8)$
C) $(t+5)(t+8)$

___ 53. Factor:

$$bz + 7b - 2z - 14$$

- A) $(z+7)(2-b)$ D) $(z-7)(b+2)$
B) $(z+7)(b+2)$ E) $(z+2)(b-7)$
C) $(z+7)(b-2)$

___ 54. Factor.
 $63uv - 28u - 18v^2 + 8v$

- A) $(2v - 7u)(9v + 4)$
- B) $(2v - 7u)(9v - 4)$
- C) $(7u + 2v)(9v + 4)$

- D) $(7u - 2v)(9v + 4)$
- E) $(7u - 2v)(9v - 4)$

___ 55. Factor: $a^2 - 9a + 81$.

- A) $(a + 1)(a - 81)$
- B) $(a + 9)(a + 9)$
- C) $(a - 3)(a - 27)$

- D) $(a - 3)(a + 27)$
- E) Nonfactorable over the integers

___ 56. Factor: $x^2 - 11xy + 28y^2$.

- A) $(x + 7y)(x + 4y)$
- B) $(x - 7y)(x + 4y)$
- C) $(x - 7y)(x - 4y)$

- D) $(x + 7y)(4y - x)$
- E) Nonfactorable over the integers

___ 57. Factor: $10z^4 - 120z^3 + 200z^2$.

- A) $10z^2(z + 10)(z + 2)$
- B) $10z(z - 10)(z - 2)$
- C) $10z^2(z - 10)(z - 2)$

- D) $10(z^2 + 10)(z^2 - 2)$
- E) Nonfactorable over the integers

___ 58. Factor: $4c^2 - 29c - 24$.

- A) $(c + 8)(4c - 3)$
- B) $(c + 8)(4c + 3)$
- C) $(c - 8)(4c - 3)$

- D) $(c - 8)(4c + 3)$
- E) Nonfactorable over the integers

___ 59. Factor: $4c^2 - 24c + 35$.

- A) $(2c + 7)(2c - 5)$
- B) $(2c + 7)(2c + 5)$
- C) $(2c - 7)(2c - 5)$

- D) $(c - 7)(2c + 5)$
- E) Nonfactorable over the integers

___ 60. Factor by the method of using trial factors.

$$8 - 7r - r^2$$

- A) $-(8+r)(1-r)$ B) $(8+r)(1-r)$ C) $(8-r)(1+r)$ D) $(8-r)(1-r)$ E) $8-r(7+r)$

___ 61. Factor by grouping.

$$3v^2 - 11v + 20$$

- A) $(v+5)(3v+4)$ D) $(v-5)(3v+4)$
B) $(v+5)(3v-4)$ E) nonfactorable
C) $(v-5)(3v-4)$

___ 62. Factor by grouping: $3b^2 - 35b + 50$.

- A) $(b+10)(3b-5)$ D) $(b+5)(3b+10)$
B) $(b+10)(3b+5)$ E) Nonfactorable over the integers
C) $(b-10)(3b-5)$

___ 63. Factor by grouping: $8a^2 - 34a + 21$.

- A) $(8a+7)(a-3)$ D) $(a-7)(8a-3)$
B) $(4a-7)(2a+3)$ E) Nonfactorable over the integers
C) $(2a-7)(4a-3)$

___ 64. Factor by grouping.

$$24w^3x - 66w^2x^2 + 45wx^3$$

- A) $3wx(4w-5x)(2w-3x)$ D) $(12w^2x-15wx^2)(2w-3x)$
B) $3wx(4w+5x)(2w+3x)$ E) $(4w-5x)(6w^2x-9wx^2)$
C) $3wx(8w^2-22wx+15x^2)$

___ 65. Factor: $49x^2 - 16$.

- A) $(4+7x)(4-7x)$ D) $(7x+4)(7x-4)$
B) $(7x-4)^2$ E) Nonfactorable over the integers
C) $(7x+4)^2$

___ 66. Factor:

$$4y^2 - 25$$

A) $(5 + 2y)(5 - 2y)$

B) $(2y - 5)^2$

C) $(2y + 5)^2$

D) $(2y + 5)(2y - 5)$

E) Nonfactorable

___ 67. Factor:

$$16b^2 + 40b + 25$$

A) $(5 + 4b)(5 - 4b)$

B) $(4b - 5)^2$

C) $(4b + 5)^2$

D) $(4b + 5)(4b - 5)$

E) Nonfactorable

___ 68. Factor: $81c^2 + 36cx + 4x^2$.

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

B) $(9c - 2x)^2$

C) $(9c + 2x)^2$

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

E) Nonfactorable over the integers

___ 69. Factor: $a^2 - 10a - 25$.

A) $(a + 5)(a - 5)$

B) $(a - 5)^2$

C) $(a + 5)^2$

D) $(5 + a)(5 - a)$

E) Nonfactorable over the integers

___ 70. Factor: $9x^2 - 30xy + 25y^2$.

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

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

C) $(3x + 5y)^2$

D) $(3x + 5y)(3x - 5y)$

E) Nonfactorable over the integers

___ 71. Factor the following expression:

$$125x^3 - 8y^3$$

- A) $(5x - 2y)(25x^2 + 4y^2)$ D) $(5x + 2y)(25x^2 - 10xy + 4y^2)$
B) $(5x - 2y)(25x^2 + 10xy + 4y^2)$ E) Nonfactorable
C) $(5x - 2y)(25x^2 - 10xy + 4y^2)$

___ 72. Factor the following expression:

$$x^{2n} + 9x^n + 20$$

- A) $(x^n + 5)(x^n + 4)$ D) $(x^n + 5)(x^n - 4)$
B) $(x^n - 5)(x^n - 4)$ E) Nonfactorable
C) $(x^n - 5)(x^n + 4)$

___ 73. Factor:

$$2b^2 - 32$$

- A) $2(b + 4)(b - 4)$ D) $2(4 + b)(4 - b)$
B) $2(b - 4)^2$ E) Nonfactorable
C) $2(b + 4)^2$

___ 74. Factor the following expression:

$$81a^4 - b^4$$

- A) $(9a^2 + b^2)(3a + b)(3a + b)$ D) $(3a + b)^2(3a - b)^2$
B) $(9a^2 + b^2)(3a + b)(3a - b)$ E) Nonfactorable
C) $(3a^2 + b)^2(3a^2 - b)^2$

___ 75. Factor the following expression:

$$a^{2n+2} - 6a^{n+2} + 9a^2$$

- A) $a^2(a^n - 3)^2$ B) $a^2(a^n + 3)^2$ C) $a^2(a^n + 6)^2$ D) $a^2(a^n - 6)^2$ E) Nonfactorable

___ 76. Solve: $(c + 2)(c - 4) = 0$.

- A) 2, 4 B) 2, -4 C) -2, 4 D) -2, -4 E) No solution

___ 77. Solve: $y^2 - 9 = 0$.

- A) 3, -3 B) 0, 9 C) 0, 3 D) 3 E) No solution

___ 78. Solve:

$$b^2 + 9b + 18 = 0$$

- A) 3, 6 B) 3, -6 C) -3, 6 D) -3, -6 E) No solution

___ 79. Solve: $b^2 - 2b = 0$.

- A) 2 B) 0, -2 C) 0, 2 D) 2, -2 E) No solution

___ 80. Solve:

$$19b^2 - 48b = 27$$

- A) -9, 3 B) $\frac{9}{19}$, 3 C) $-\frac{9}{19}$, 3 D) $-\frac{9}{19}$, -3 E) No solution

___ 81. Find the zeros of the function $f(x) = x^2 - 3x - 40$.

- A) $x = -8$; $x = -5$ B) $x = -5$; $x = 8$ C) $x = 5$; $x = 8$ D) $x = -8$; $x = 5$ E) none of the above

Answer Key

1. B
2. D
3. A
4. A
5. B
6. D
7. B
8. C
9. D
10. A
11. D
12. D
13. E
14. E
15. C
16. B
17. D
18. A
19. A
20. B
21. B
22. D
23. D
24. B
25. A
26. A
27. B
28. B
29. A
30. A
31. B
32. D
33. D
34. A
35. C
36. C
37. B
38. D
39. B
40. A
41. B
42. D
43. B
44. C
45. C
46. A
47. D
48. E
49. D
50. A
51. A
52. D
53. C

- 54. E
- 55. E
- 56. C
- 57. C
- 58. D
- 59. C
- 60. B
- 61. E
- 62. C
- 63. C
- 64. A
- 65. D
- 66. D
- 67. C
- 68. C
- 69. E
- 70. B
- 71. B
- 72. A
- 73. A
- 74. B
- 75. A
- 76. C
- 77. A
- 78. D
- 79. C
- 80. C
- 81. B