

Semester 2 Final Review

Name_____

- ____ 1. Solve the system of equations.

$$-5x + y = -5$$

$$-4x + 2y = 2$$

- a. $(-8, -15)$ b. $(-2, -15)$ c. $(0, 1)$ d. $(2, 5)$

- ____ 2. Solve the system of equations.

$$3x + 2y = 7$$

$$y = -3x + 11$$

- a. $(6, -3)$ b. $(6, -7)$ c. $(-4, 19/2)$ d. $(5, -4)$

- ____ 3. Sharon has some one-dollar bills and some five-dollar bills. She has 14 bills. The value of the bills is \$30. Solve a system of equations to find how many of each kind of bill she has.

- a. 4 five-dollar bills, 10 one-dollar bills c. 5 five-dollar bills, 5 one-dollar bills
b. 3 five-dollar bills, 15 one-dollar bills d. 5 five-dollar bills, 9 one-dollar bills

- ____ 4. A jar containing only nickels and dimes contains a total of 60 coins. The value of all the coins in the jar is \$4.45. Solve the system to find the number of nickels and dimes that are in the jar.

- a. 30 nickels and 30 dimes c. 29 nickels and 31 dimes
b. 31 nickels and 29 dimes d. 28 nickels and 32 dimes

- ____ 5. Simplify: $a^5 \cdot 3b^9 \cdot 6a$

- a. $18a^6b^9$ b. $10a^6b^9$ c. $18ab^{15}$ d. $18a^{45}b^9$

- ____ 6. Simplify: $(5k^2)^3$

- a. $125k^6$ b. $125k^5$ c. $5k^6$ d. $5k^8$

- ____ 7. Simplify: $\frac{x^{14}}{x^7}$

- a. x^7 b. x^{98} c. $\frac{1}{x^7}$ d. x^{21}

- ____ 8. Simplify: $\left(\frac{3x}{2}\right)^4$

- a. $\frac{81x^4}{16}$ b. $6x^4$ c. $\frac{12x^4}{8}$ d. $\frac{81x^4}{2}$

- ____ 9. Simplify: $(2x^0y^2)^3$

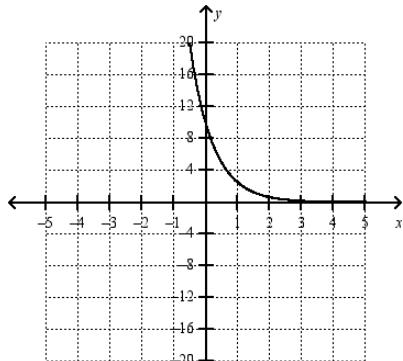
- a. 0 b. $6y^5$ c. $8y^6$ d. $8x^3y^5$

- ____ 10. Simplify: $(3p^4q^{-5})^{-2}$

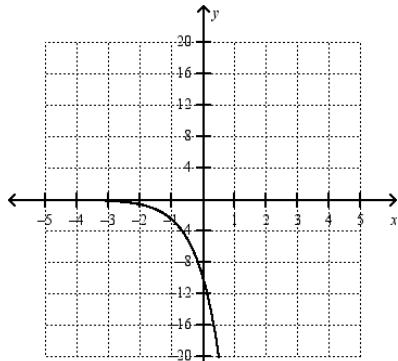
- a. $\frac{3p^2}{q^7}$ b. $\frac{q^{10}}{9p^8}$ c. $\frac{q^{25}}{6p^{16}}$ d. $\frac{q^{25}}{9p^{16}}$

_____ 11. Graph: $y = 10 \cdot 4^x$

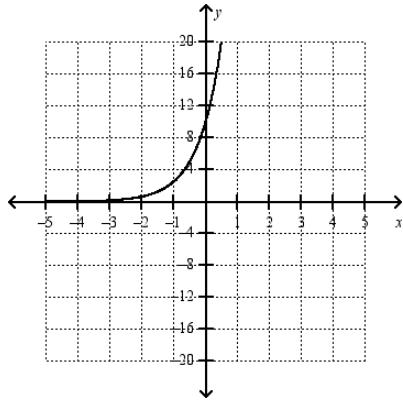
a.



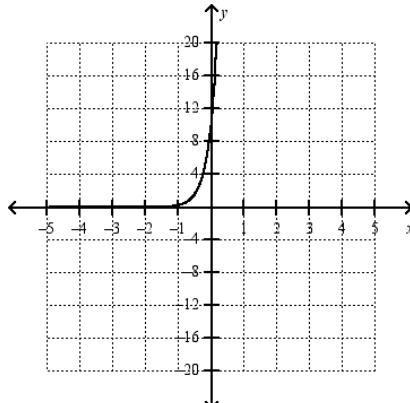
c.



b.



d.



_____ 12. Suppose the population of a town is 15,200 and is growing 2% each year.

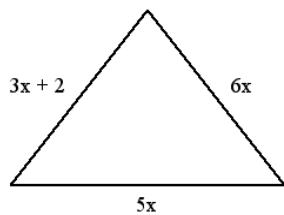
- Write an equation to model the population growth.
- Predict the population after 11 years.

- $y = 15,200 \cdot 2^x$; about 18,899 people
- $y = 15,200 \cdot 1.02^x$; about 18,899 people
- $y = 2 \cdot 15,200^x$; about 334,400 people
- $y = 15,200 \cdot 2^x$; about 31,129,600 people

_____ 13. A boat costs \$11,850 and decreases in value by 10% per year. How much will the boat be worth after 8 years?

- \$5,101.04
- \$11,770.00
- \$4,590.93
- \$25,401.53

_____ 14. Write the perimeter of the figure.



not to scale

- $9x + 7x$
- $11x + 3x + 2$
- $14x + 2$
- $14x$

_____ 15. Simplify: $(4w^2 - 4w - 8) - (2w^2 + 3w - 6)$

- a. $2w^2 - 7w - 2$ c. $2w^2 - 1w - 14$
b. $6w^2 - 1w - 14$ d. $6w^2 + 7w + 2$

_____ 16. Simplify: $8p(-3p^2 + 6p - 2)$

- a. $-5p^3 + 14p^2 - 6p$ c. $14p^2 - 6p - 5p^3$
b. $48p^2 - 16p - 24p^3$ d. $-24p^3 + 48p^2 - 16p$

_____ 17. Multiply and simplify: $(3x - 7)(3x - 5)$

- a. $9x^2 + 6x + 35$ c. $9x^2 - 36x - 35$
b. $9x^2 + 36x + 35$ d. $9x^2 - 36x + 35$

_____ 18. Factor: $w^2 + 18w + 77$

- a. $(w - 7)(w + 11)$ c. $(w + 7)(w + 11)$
b. $(w - 7)(w - 11)$ d. $(w + 1)(w + 77)$

_____ 19. Factor: $x^2 - x - 42$

- a. $(x - 7)(x + 6)$ c. $(x + 7)(x - 6)$
b. $(x + 7)(x + 6)$ d. $(x - 7)(x - 6)$

_____ 20. Factor: $20x^2 + 22x - 12$

- a. $2(5x - 2)(2x + 3)$ c. $(10x - 2)(4x + 3)$
b. $2(5x + 2)(2x - 3)$ d. $2(5x + 4)(2x - 3)$

_____ 21. Which of the quadratic functions has the widest graph?

- a. $y = \frac{1}{3}x^2$ b. $y = -4x^2$ c. $y = 0.3x^2$ d. $y = -\frac{4}{5}x^2$

_____ 22. Find the coordinates of the vertex of the graph of the function $y = 2x^2 + 8x - 1$.

- a. $(2, 23)$ c. $(4, 63)$
b. $(-4, -1)$ d. $(-2, -9)$

_____ 23. Solve: $z^2 - 6z - 27 = 0$

- a. $z = 3$ or $z = 9$ c. $z = -3$ or $z = 9$
b. $z = 3$ or $z = -9$ d. $z = -3$ or $z = -9$

_____ 24. Solve using the quadratic formula: $5y^2 - 8y = 2$

- a. $1.82, -0.22$ b. $11.2, -9.6$ c. $3.64, -0.44$ d. $0.22, -1.82$

_____ 25. Solve using square roots: $7x^2 + 6 = 13$

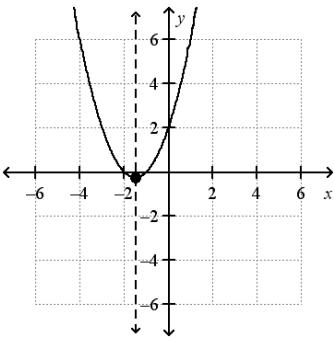
- a. no real number solutions c. ± 7
b. 1 d. ± 1

_____ 26. The height of a ball dropped from a height of 100 feet is given by the equation $h = -16t^2 + 100$ where h is height in feet and t is time in seconds. When does the ball hit the ground?

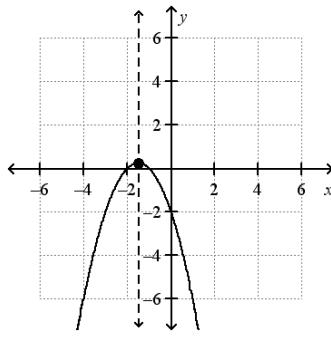
- a. 2.5 seconds b. 3.125 seconds c. 6.25 seconds d. never hits ground

_____ 27. Graph $f(x) = x^2 + 3x + 2$

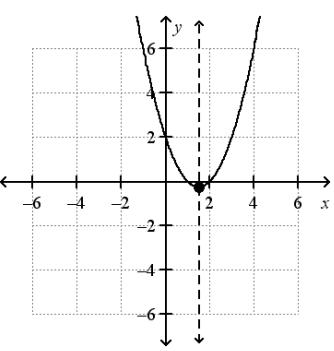
a.



c.



b.



_____ 28. Does the table represent a linear, exponential, or quadratic function?

x	y
0	3
1	0
2	-1
3	0
4	3

- a. quadratic
b. linear

- c. exponential
d. don't chose this answer!

_____ 29. Simplify: $-4\sqrt{160}$

- a. $-4\sqrt{80}$ b. $-4\sqrt{16}$ c. $-16\sqrt{10}$ d. $\sqrt{10}$

_____ 30. Simplify: $4\sqrt{2} - \sqrt{2}$

- a. $5\sqrt{2}$ b. $5\sqrt{4}$ c. $3\sqrt{4}$ d. $3\sqrt{2}$

_____ 31. Simplify: $\sqrt{10}(\sqrt{6} - 8)$

- a. $\sqrt{60} - 8$ b. $\sqrt{60} - 8\sqrt{10}$ c. $\sqrt{16} - 8\sqrt{10}$ d. $2\sqrt{15} - 8\sqrt{10}$

_____ 32. Simplify: $\sqrt{50a^9b^{16}}$

- a. $25a^3b^4$ b. $5a^3b^4\sqrt{2}$ c. $25ab^8\sqrt{a}$ d. $5ab^8\sqrt{2a}$

_____ 33. Simplify: $(4 + 2\sqrt{3})(1 - \sqrt{3})$

- a. -2 b. $-2 - 2\sqrt{3}$ c. $4 - 4\sqrt{3}$ d. $5 + \sqrt{3}$