

Review: Quadratic & Power Functions

Name: _____

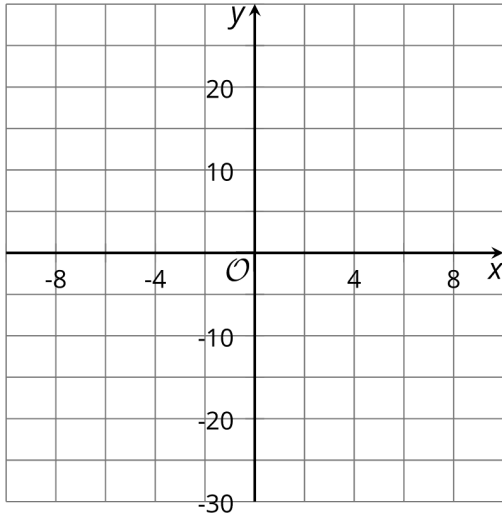
Date: _____

1. The following expressions all define the same quadratic function.

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

$$x^2 + 2x - 24 \quad (x + 1)^2 - 25$$

- What is the y -intercept of the graph of the function?
- What are the x -intercepts of the graph?
- What is the vertex of the graph?
- Sketch a graph of the function without graphing technology. Make sure the x -intercepts, y -intercept, and vertex are plotted accurately.



2. Determine the x -intercepts and the x -coordinate of the vertex of the graph that represents each equation.

equation	x -intercepts	x -coordinate of the vertex
$y = x(x - 2)$		
$y = (x - 4)(x + 5)$		
$y = -5x(3 - x)$		

3. For each function, write the coordinates of the vertex of its graph and tell whether the graph opens up or down.

function	coordinates of vertex	graph opens up or down?
$f(x) = (x - 4)^2 - 5$		
$g(x) = -x^2 + 5$		
$h(x) = 2(x + 1)^2 - 4$		

4. Determine the x -intercepts, the vertex, and the y -intercept of the graph of each equation.

equation	x -intercepts	vertex	y -intercept
$y = (x - 5)(x - 3)$			
$y = 2x(8 - x)$			

5. The following quadratic expressions all define the same function.

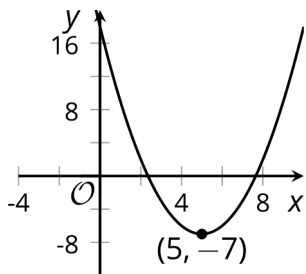
$$(x + 5)(x + 3)$$

$$x^2 + 8x + 15 \quad (x + 4)^2 - 1$$

Select *all* of the statements that are true about the graph of this function.

- The y -intercept is $(0, -15)$.
- The vertex is $(-4, -1)$.
- The x -intercepts are $(-5, 0)$ and $(-3, 0)$.
- The x -intercepts are $(0, 5)$ and $(0, 3)$.
- The x -intercept is $(0, 15)$.
- The y -intercept is $(0, 15)$.
- The vertex is $(4, -1)$.

6. Here the graph of quadratic function f .



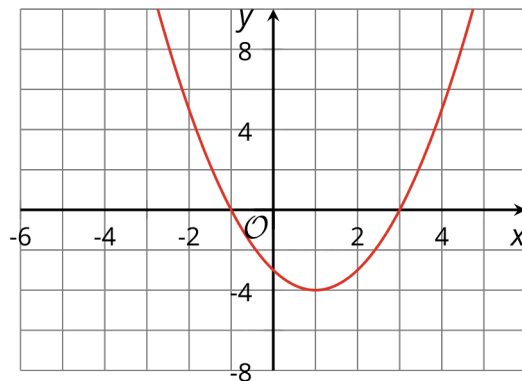
Andre uses the expression $(x - 5)^2 + 7$ to define f .

Noah uses the expression $(x + 5)^2 - 7$ to define f .

Do you agree with either of them? Explain your reasoning.

7. a) What is the y -intercept of the graph of the equation $y = x^2 - 5x + 4$?
- b) An equivalent way to write this equation is $y = (x - 4)(x - 1)$. What are the x -intercepts of this equation's graph?

8. Here is a graph that represents a quadratic function.



Which expression could define this function?

- A. $(x + 3)(x + 1)$ B. $(x + 3)(x - 1)$
- C. $(x - 3)(x + 1)$ D. $(x - 3)(x - 1)$

9. Select *all* equations whose graphs have a vertex with x -coordinate 2.
- $y = (x - 2)(x - 4)$
 - $y = (x - 2)(x + 2)$
 - $y = (x - 1)(x - 3)$
 - $y = x(x + 4)$
 - $y = x(x - 4)$

10. Select *all* true statements about the graph that represents $y = 2x(x - 11)$.

- Its x -intercepts are at $(-2, 0)$ and $(11, 0)$.
- Its x -intercepts are at $(0, 0)$ and $(11, 0)$.
- Its x -intercepts are at $(2, 0)$ and $(-11, 0)$.
- It has only one x -intercept.
- The x -coordinate of its vertex is -4.5 .
- The x -coordinate of its vertex is 11 .
- The x -coordinate of its vertex is 4.5 .
- The x -coordinate of its vertex is 5.5 .

11. For each equation, write the coordinates of the vertex of the graph that represents the equation.

1. $y = (x - 3)^2 + 5$
2. $y = (x + 7)^2 + 3$
3. $y = (x - 4)^2$
4. $y = x^2 - 1$
5. $y = 2(x + 1)^2 - 5$
6. $y = -2(x + 1)^2 - 5$

12. What are the x -intercepts of the graph of $y = 12x^2 - 5x - 2$?

- A. 1 and $-\frac{1}{6}$
- B. -1 and $\frac{1}{6}$
- C. $\frac{2}{3}$ and $-\frac{1}{4}$
- D. $-\frac{2}{3}$ and $\frac{1}{4}$

13. If one factor of $6x^2 + 5x - 6$ is $3x - 2$, the other factor is

- A. $3x + 3$
- B. $6x + 3$
- C. $2x + 3$
- D. $2x - 3$

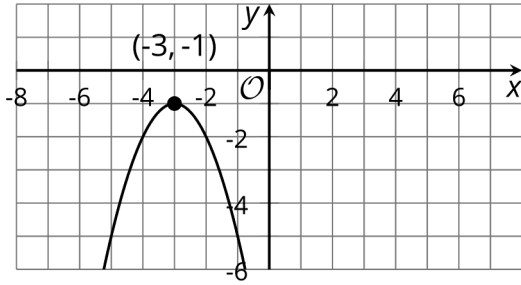
14. Written in factored form, the trinomial $3x^2 + 5x - 2$ is equivalent to

- A. $(3x + 1)(x - 2)$
- B. $(3x - 1)(x + 2)$
- C. $(3x + 2)(x - 1)$
- D. $(3x - 2)(x + 1)$

15. Factor completely: $3x^2 - 15x - 42$

16. Factor completely: $2a^2 + 2a - 84$

17. Which equation is represented by the graph?



- A. $y = (x - 1)^2 + 3$ B. $y = (x - 3)^2 + 1$
 C. $y = -(x + 3)^2 - 1$ D. $y = -(x - 3)^2 + 1$

18. Which expression is equivalent to $(3x^2)^3$?

- A. $9x^5$ B. $9x^6$ C. $27x^5$ D. $27x^6$

19. The expression $\frac{(10w^3)^2}{5w}$ is equivalent to

- A. $2w^5$ B. $2w^8$ C. $20w^5$ D. $20w^8$

20. The quotient of $\frac{-18x^6}{6x^3}$ is equal to

- A. $-3x^3$ B. $-3x^2$
 C. $-12x^2$ D. $-12x^3$

21. What is the product of $(-2x^3)(5x^{-4})$?

- A. $-10x^{12}$ B. $-10x^{-1}$
 C. $3x^7$ D. $10x^7$

22. Which expression is equivalent to $(-2x^4)^2$?

- A. $4x^6$ B. $4x^8$ C. $-4x^8$ D. $4x^{16}$

23. If y varies directly as x and $y = 32$ when $x = 4$, find the value of y when $x = 5$.

24. The number of chirps made by a cricket varies directly as the temperature. If at 12° a cricket chirps 30 times per minute, how many times per minute will the cricket chirp at 20° ?

25. The diameter of a wheel varies inversely as the number of revolutions that the wheel makes to cover a certain distance. If a wheel with a 26-inch diameter makes 10 revolutions in covering a certain distance, how many revolutions will a wheel with a diameter of 20 inches make in covering the same distance?

Review: Quadratic & Power Functions 5/5/2022

1.		16.	
Answer:		Answer:	$2(a + 7)(a - 6)$
Points:	1	Points:	1
2.		17.	
Answer:		Answer:	
Points:	1	Points:	1
3.		18.	
Answer:		Answer:	D
Points:	1	Points:	1
4.		19.	
Answer:		Answer:	C
Points:	1	Points:	1
5.		20.	
Points:	1	Answer:	A
6.		Points:	1
Answer:		21.	
Points:	1	Answer:	B
7.		Points:	1
Answer:		22.	
Points:	1	Answer:	B
8.		Points:	1
Answer:		23.	
Points:	1	Answer:	40
9.		Points:	1
Points:	1	24.	
10.		Answer:	50
Points:	1	Points:	1
11.		25.	
Answer:		Answer:	13
Points:	1	Points:	1
12.			
Answer:	C		
Objective:	2A.10.0		
Points:	1		
13.			
Answer:	C		
Points:	1		
14.			
Answer:	B		
Points:	1		
15.			
Answer:	$3(x + 2)(x - 7)$		
Points:	1		