

QUADRATIC FUNCTIONS (MISC)

Name: _____

Date: _____

1. Which function has zeros at 2 and -5?
- A.** $y = x^2 + 3x + 10$ **B.** $y = x^2 - 3x + 10$
C. $y = x^2 + 3x - 10$ **D.** $y = x^2 - 3x - 10$

2. Which equation states a rule for the pattern shown in the table below?

| | | | | |
|-------------------|---|---|----|----|
| Input (x) | 1 | 2 | 3 | 4 |
| Output (y) | 1 | 5 | 11 | 19 |

- F.** $y = x^2 - x + 1$ **G.** $y = x^2 + x - 1$
H. $y = x^2 + 3$ **J.** $y = x^2 + 1$
3. A quadratic function has x-intercepts at (-2, 0) and (8, 0), with a maximum at (3, 50). Which equation represents this function?
- A.** $y = (x - 8)(x + 2)$ **B.** $y = (x + 8)(x - 2)$
C. $y = -2(x - 8)(x + 2)$ **D.** $y = -\frac{1}{2}(x - 8)(x + 2)$

4. Each of the functions shown represents the height (in feet) of a rocket t seconds after being fired.

$$h(t) = -16(t - 5)^2 + 576$$

$$h(t) = -16(t + 1)(t - 11)$$

What is the initial height of the rocket above the ground?

- F.** 576 feet **G.** 400 feet
H. 176 feet **J.** 11 feet
5. Antonio threw a ball with an upward velocity of 6 meters per second from a height of 8 meters. The formula $h = -4.9t^2 + 6t + 8$ describes this situation, where t represents the time in seconds since the ball was thrown.
- Which estimate is closest to the time it will take the ball to hit the ground ($h = 0$)?
- A.** 0.71 second **B.** 0.80 second
C. 1.94 seconds **D.** 2.03 seconds

6. Suppose that the equation $V = 20.8x^2 - 458.3x + 3,500$ represents the value of a car from 1964 to 2002.

What year did the car have the least value? ($x = 0$ in 1964)

- F.** 1965 **G.** 1970 **H.** 1975 **J.** 1980

7. Consider these two equations:

$$y = 3x + 2$$

$$y = -x^2 - 4x + 10$$

Here are the first steps to solving this system of equations:

$$3x + 2 = -x^2 - 4x + 10$$

$$x^2 + 7x - 8 = 0$$

$$(x - 1)(x + 8) = 0$$

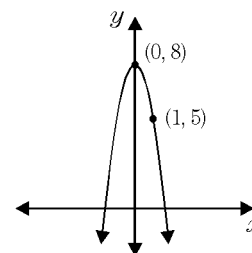
What is one solution to the system of equations?

- A.** (1, -8) **B.** (-1, 8)
C. (1, 5) **D.** (-1, -1)
8. A circular pond is modeled by the equation $x^2 + y^2 = 225$. A bridge over the pond is modeled by a segment of the equation $x - 7y = -75$. What are the coordinates of the points where the bridge meets the edge of the pond?
- F.** (9, 12) and (-12, 9)
G. (9, 12) and (12, 9)
H. (9, -12) and (-12, -9)
J. (-9, 12) and (12, -9)
9. The sum of two numbers is 24. The sum of the squares of the two numbers is 306. What is the product of the two numbers?

- A.** 119 **B.** 128 **C.** 135 **D.** 144

10. What is the equation of the given parabola?

- F.** $y = -3x^2 + 8$
G. $y = -\frac{1}{3}x^2 + 8$
H. $y = -\frac{1}{3}x^2 - 8$
J. $y = 3x^2 - 8$



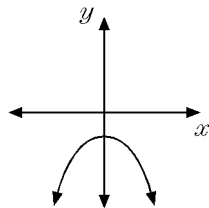
11. What is the vertex of the quadratic function $y = -(x - 3)^2 + 4$?
- A.** (5, 0) **B.** (0, -5) **C.** (3, 4) **D.** (-3, 4)

12. What are the x-intercepts for the function $f(x) = x^2 + 2x - 15$?
- F.** (0, -5), (0, 3) **G.** (0, 5), (0, -3)
H. (5, 0), (-3, 0) **J.** (-5, 0), (3, 0)

13. Which is an x-intercept of $y = 2x^2 - 7x + 3$?
- A.** $-\frac{1}{2}$ **B.** $\frac{1}{2}$ **C.** -3 **D.** $\frac{7}{4}$

14. Which equation can represent the parabola in the diagram?

- F.** $y = -x^2$
G. $y = x^2$
H. $y = x^2 - 3$
J. $y = -x^2 - 3$



15. What is the vertex of the graph of the equation $y = 3x^2 + 6x + 1$?
- A.** (-1, -2) **B.** (-1, 10)
C. (1, -2) **D.** (1, 10)

16. Which is an equation of the axis of symmetry of the parabola whose equation is $y = 3x^2 - 12x - 13$?

- F.** $x = -4$ **G.** $x = 2$ **H.** $x = 3$ **J.** $x = 4$

17. What are the vertex and axis of symmetry of the parabola $y = x^2 - 16x + 63$?

- A.** vertex: (8, -1); axis of symmetry: $x = 8$
B. vertex: (8, 1); axis of symmetry: $x = 8$
C. vertex: (-8, -1); axis of symmetry: $x = -8$
D. vertex: (-8, 1); axis of symmetry: $x = -8$

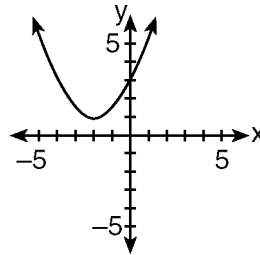
18. What is the y-intercept of the graph of the equation $y = 2x^2 - 5x + 7$?

- F.** -5 **G.** 2 **H.** 7 **J.** -7

19. If $y = x^2 + 14x - 5$ were put in vertex form $y = a(x - h)^2 + k$, then $k = ?$

- A.** -5 **B.** -54 **C.** 44 **D.** 49

20. The accompanying diagram shows a parabola.



Which statement is *not* true?

- F.** The equation of the axis of symmetry is $x = -2$.
G. The parabola has a minimum point.
H. The turning point of the parabola is (-2, 1).
J. The parabola has two x-intercepts.

21. An archer shoots an arrow into the air such that its height at any time, t , is given by the function $h(t) = -16t^2 + kt + 3$. If the maximum height of the arrow occurs at time $t = 4$, what is the value of k ?

- A.** 128 **B.** 64 **C.** 8 **D.** 4

22. If the roots of a quadratic equation are -2 and 3, the equation can be written as

- F.** $(x - 2)(x + 3) = 0$ **G.** $(x + 2)(x - 3) = 0$
H. $(x + 2)(x + 3) = 0$ **J.** $(x - 2)(x - 3) = 0$

23. What is the equation of the parabola with vertex (1, 3) and passing through (3, 5)?

- A.** $y = (x + 1)^2 + 3$ **B.** $y = -\frac{1}{2}(x + 1)^2 + 3$
C. $y = \frac{1}{2}(x - 1)^2 + 3$ **D.** $y = (x + 1)^2 + 3$

24. What is the equation of the parabola with vertex (2, 5) and y-intercept 9?

- F.** $y = (x + 2)^2 + 5$ **G.** $y = -(x - 2)^2 + 5$
H. $y = 2(x - 2)^2 + 5$ **J.** $y = (x - 2)^2 + 5$

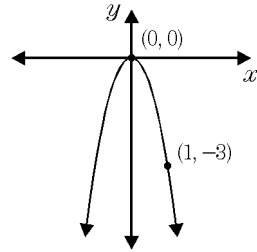
25. What is the equation of the given parabola?

A. $y = -9x^2$

B. $y = -3x^2$

C. $y = -\frac{1}{3}x^2$

D. $y = -\frac{1}{9}x^2$



26. Which is an equation of the axis of symmetry of the parabola whose equation is $y = 2x^2 - 3x + 4$?

F. $x = -\frac{3}{4}$ G. $x = \frac{3}{4}$ H. $y = -\frac{3}{4}$ J. $y = \frac{3}{4}$

27. When the equation $y = \frac{1}{3}(x - 6)^2 + 6$ is re-written in standard form, $y = ax^2 + bx + c$, what is the value of b ?

A. -12 B. -4 C. 0 D. 18

28. A student drops a marble out of several different windows from a very tall building. The time it takes to hit the ground from these different heights is recorded in the data table.

| t (sec) | d (feet) |
|-----------|------------|
| 0.87 | 12 |
| 1.22 | 24 |
| 1.52 | 37 |
| 2.32 | 86 |
| 2.63 | 111 |
| 3.02 | 146 |

Using a quadratic fit, predict the height from which the student would drop the marble in order for it to land four seconds after release.

F. 198 feet G. 211 feet

H. 256 feet J. 513 feet

29. What does the quadratic function $f(x) = x^2 - 6x + 8$ look like when it is rewritten in the form $f(x) = a(x - p)^2 + q$?

A. $f(x) = (x - 3)^2 + 17$ B. $f(x) = (x - 3)^2 - 1$

C. $f(x) = (x - 6)^2 - 28$ D. $f(x) = (x + 6)^2 - 28$

30. If $y = -2x^2 + 8x - 5$ were put in vertex form $y = a(x - h)^2 + k$, then $k = ?$

F. -13 G. -3 H. 3 J. 1

Problem-Attic format version 4.4.314

© 2011–2017 EducAide Software
Licensed for use by Aubrey Parker
Terms of Use at www.problem-attic.com

QUADRATIC FUNCTIONS (MISC) 2/25/2018

1.
Answer: C

2.
Answer: G

3.
Answer: C

4.
Answer: H

5.
Answer: D

6.
Answer: H

7.
Answer: C

8.
Answer: F

9.
Answer: C

10.
Answer: F
Objective: A.06B

11.
Answer: C

12.
Answer:

13.
Answer: B

14.
Answer: J

15.
Answer: A

16.
Answer: G

17.
Answer: A

18.
Answer: H

19.
Answer: B
Objective: L.04D

20.
Answer: J

21.
Answer: A

22.
Answer: G

23.
Answer: C
Objective: A.06B

24.
Answer: J
Objective: A.06B

25.
Answer: B
Objective: A.06B

26.
Answer: G

27.
Answer: B
Objective: A.06B

28.
Answer: H
Objective: A.08B

29.
Answer: B
Objective: L.04D

30.
Answer: H
Objective: L.04D