1. Which of the following is a quadratic function?

- ☐ $f(x) = 3x - 4$
- ☐ $f(x) = 2x^3 - x^2 + 1$
- ☐ $f(x) = 7x^2 - x + 9$
- ☐ $f(x) = (x^2 - 3)^2 + 18$

2. Which of the following is a parabola that opens upward?

- ☐ $y = 3x^2 - 4$
- ☐ $y = 5x - x^2 - 1$
- ☐ $y = -7(x + 1)^2$
- ☐ $y = 18 - (x - 3)^2$

3. Which of the following parabolas crosses the y-axis at $(0, -5)$?

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

4. What is the y-intercept of the parabola $y = -4(x - 1)^2 - 3x + 1$?

- ☐ $(0, 1)$
- ☐ $(0, -3)$
- ☐ $(0, 5)$
- ☐ $(0, -6)$

5. How many times does the parabola $y = x^2 + x - 3$ cross the x-axis?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3

6. What are the x-intercepts of the parabola $y = 2x^2 - x - 3$?

- ☐ $(-1, 0)$ or $(-3/2, 0)$
- ☐ $(1, 0)$ or $(3/2, 0)$
- ☐ $(1, 0)$ or $(-3/2, 0)$
- ☐ $(-1, 0)$ or $(3/2, 0)$

7. What is the vertex of the parabola $y = 3x^2 - 18x + 1$?

- ☐ $(6, 1)$
- ☐ $(3, -26)$
- ☐ $(-3, 82)$
- ☐ $(-6, 217)$

8. Which of the following parabolas has a minimum value?

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

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9. What is the maximum value of the parabola $y = -x^2 + 10x + 4$?

☐ 29 ☐ -71 ☐ 71 ☐ -29

10. If $f(x) = 3x^2 - x + 2$, then $f(2) = ?$

☐ -12 ☐ 12 ☐ 16 ☐ -16

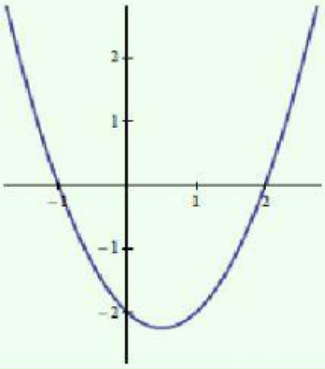
11. Which of the following represents the parabola graphed below?

☐ $y = (x+2)(x+1)$

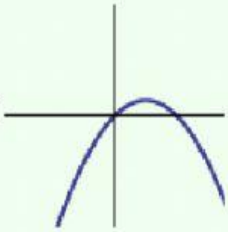
☐ $y = (x-2)(x-1)$

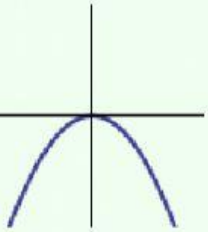
☐ $y = (x+2)(x-1)$

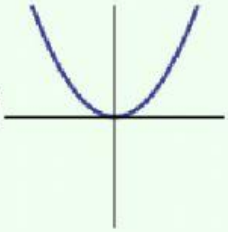
☐ $y = (x-2)(x+1)$

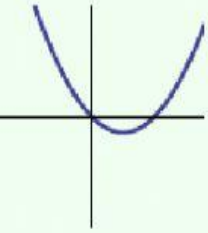


12. Which of the following is a possible graph for $y = f(x) = 5x^2$?

☐ 

☐ 

☐ 

☐ 

13. What is the range of the function $f(x) = 3x^2 - x - 1$?

☐ $(-\infty, 1/6]$ ☐ $[1/6, \infty)$ ☐ $(-\infty, -13/12]$ ☐ $[-13/12, \infty)$

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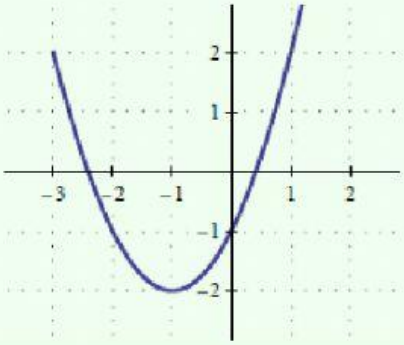
14. Which of the following does not have x-intercept?

- ☐ $f(x) = 3(x-1)^2 + 4$
- ☐ $f(x) = -3(x-1)^2 + 4$
- ☐ $f(x) = 3(x-1)^2 - 4$
- ☐ $f(x) = 4 - 3(x-1)^2$

15. What is the vertex of the parabola graphed below?

- ☐ $(2, 1)$
- ☐ $(1, 2)$
- ☐ $(-2, -1)$
- ☐ $(-1, -2)$



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