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?

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

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

☐ 29   ☐ −71   ☐ 71   ☐ −29
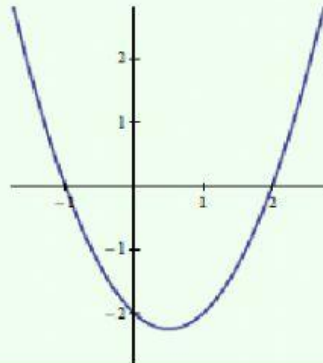
10. If $f(x) = 3x^2 - x + 2$, then $f(2) =$?

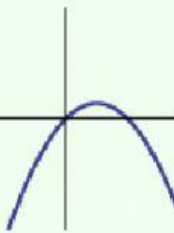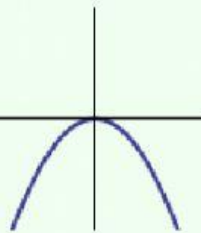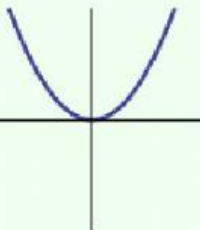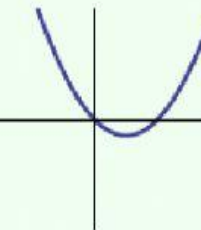☐ −12   ☐ 12   ☐ 16   ☐ −16

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 $f(x) = 3x^2 - x - 1$?

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

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

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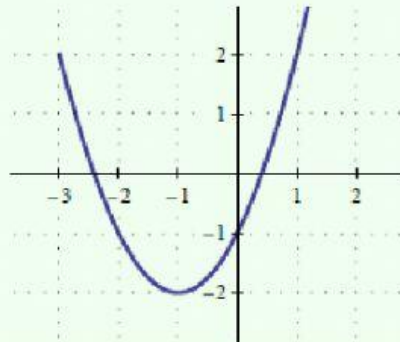
☐ $f(x) = 3(x-1)^2 - 4$ ☐ $f(x) = 4 - 3(x-1)^2$

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

☐ $(2,1)$

☐ $(1,2)$

☐ $(-2,-1)$

☐ $(-1,-2)$

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