

1. Use the parent graph $y = x^2$ to describe each transformation.

A) $f(x) = -(x-3)^2 + 1$ _____

B) $g(x) = -\frac{1}{2}x^2$ _____

C) $h(x) = \left(\frac{1}{3}x\right)^2$ _____

2. Write the quadratic function in vertex form if the parent graph $y = x^2$ is vertically stretched by a factor of 2, reflected over the x-axis, then translated 2 units right and 4 units up to create $f(x)$.

3. Using the function $f(x) = 5x^2 + 10x - 1$.

A) Does the graph open up or down? _____ Explain. _____

B) Find the equation of the axis of symmetry. _____

C) Find the vertex. _____ Is it a maximum or minimum? _____

What is the maximum or minimum value? _____

D) Find the y-intercept. (E) Find the domain. (F) Find the range.

4. Graph the function $f(x) = -x^2 + 8x - 10$.

Identify the vertex, the equation of the axis of symmetry, and four additional points on the graph. Graph the axis of symmetry as a dashed line.

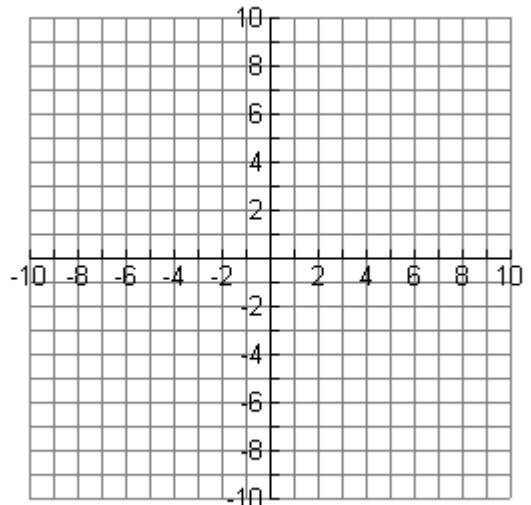
Vertex _____

Equation of the axis of symmetry _____

Coordinates of four additional points

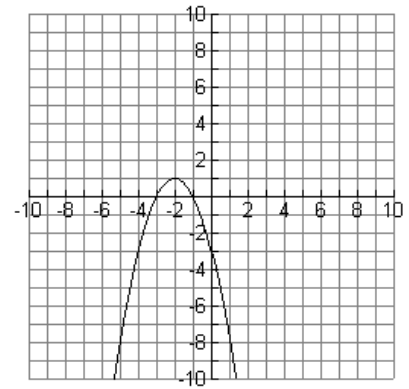
(2,), (3,)

(5,), (6,)



5. a) Write the equation of the graph in vertex form.

b) Write the equation of the graph in x-intercept form.



6. Find the zeros of the function by factoring.

$$g(x) = 4x^2 - 8x - 5$$

7. A ball is kicked from the ground with an initial vertical velocity of 80 ft/s. Write the equation used to solve this problem. After how many seconds will the ball hit the ground?

Use the projectile formula $h(t) = -16t^2 + v_0t + h_0$.

8. Find the roots of the equation by factoring.

$$7x^2 - 343 = 0$$

9. Find the roots of the equation by factoring.

$$6x^2 - x = 15$$

10. Write a quadratic function with zeros 7 and -4.

11. Write the function $f(x) = -2x^2 - 12x + 21$ in vertex form and identify its vertex.

12. Solve. $2x^2 - 30 = 0$

13. Write an equation for finding the dimensions of a rectangle in the figure, then solve the equation and state the dimensions of the rectangle. Label your answers.

