

1. Find the zeros of each function using factoring.

a.  $f(x) = x^3 - 8$

b.  $f(x) = x^2 + 12x + 35$

c.  $f(x) = 4x^2 - 81$

2. Find the roots of each equation using factoring.

a.  $3x^2 + x - 14 = 0$

b.  $270 = -10x^3$

c.  $49x^2 = 28x - 4$

3. Write a quadratic function with zeros  $-3$  and  $5$ . \_\_\_\_\_

4. A rocket is launched from ground level with an initial velocity of  $224$  ft/s. After how many seconds will the rocket hit the ground? Use  $h(t) = -16t^2 + v_0t + h_0$ .

Write the equation used to solve this problem. \_\_\_\_\_

Find the number of seconds after the rocket is launched that it will hit the ground. \_\_\_\_\_

5. Find the vertex then write the equation in vertex form.

a.  $f(x) = x^2 + 8x - 5$

b.  $f(x) = 3x^2 - 24x - 7$

Vertex \_\_\_\_\_

Vertex \_\_\_\_\_

Vertex Form \_\_\_\_\_

Vertex Form \_\_\_\_\_

6. Find the roots by any method.

a.  $2x^2 - 7 = 33$

b.  $4x^2 - 8 = 20$

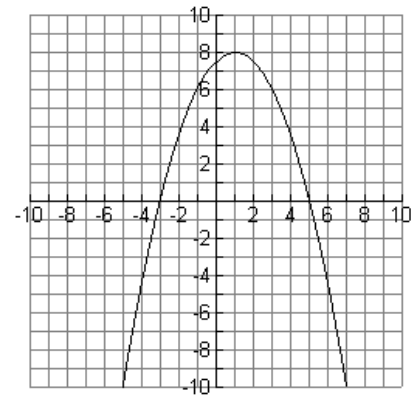
7. Identify the zeros of the graph and the equation of this graph of this quadratic function.

A)  $-3$  and  $5$ ;  $y = -(x-1)^2 + 8$

B)  $-5$  and  $3$ ;  $y = -(x-1)^2 + 8$

C)  $(1, 8)$ ;  $y = -\frac{1}{2}(x+3)(x-5)$

D)  $-3$  and  $5$ ;  $y = -\frac{1}{2}(x-1)^2 + 8$



8. 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.

