Directions: Answer the following question(s).

1 A construction worker throws a water bottle out of the basement to his friend, who did not catch it. The equation below can be used to determine h, the height of the bottle in feet, base on t, the time in seconds since the bottle was thrown.
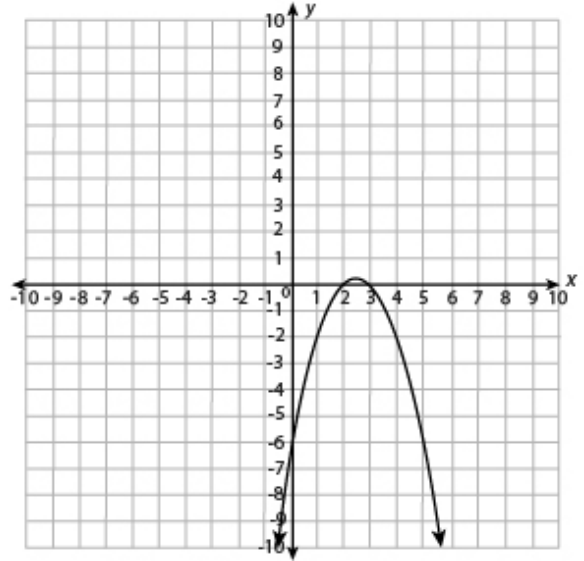
$$h = -16t^2 + 56t - 24$$

Based on the equation, when is the height of the thrown bottle equal to zero? Solve by factoring. Show your work.
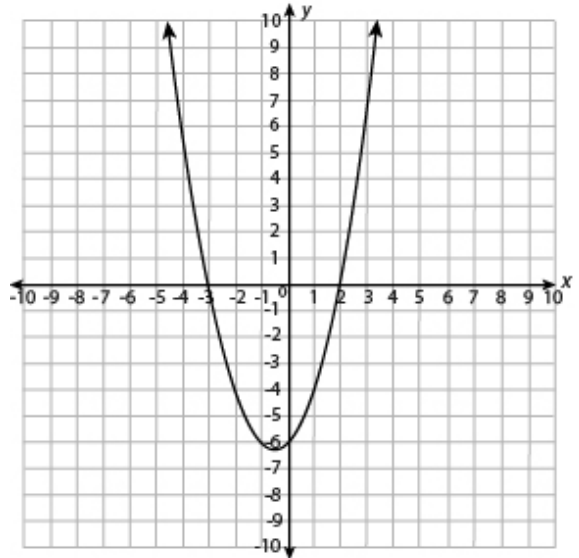
Type your answer in the box below.

Web Only Interaction

2 Given the function $f(x) = (2 - x)(x - 3)$, which of these correctly identify a zero and a sketch of the graph of the function?

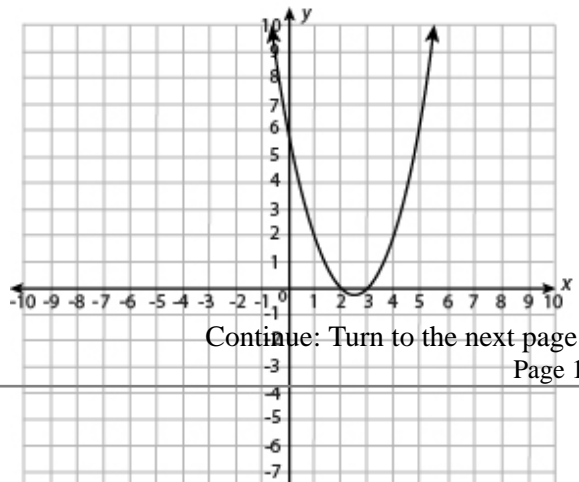A. $x = 3$,

B. $x = -3$,

C. $x = 3$,

Directions: Answer the following question(s).

3 Miguel launches his model rocket. He times the rocket's flight from launch to landing. Miguel believes the function representing the relationship between the time in seconds and the rocket's height in feet is $h(t) = -50t^2 + 150t$. Use the zeros of the polynomial to determine the flight time of Miguel's rocket.

A.   1.5 seconds

B.   2.5 seconds

C.   3.0 seconds

D.   5.0 seconds

4 What are the zeros of this function?

$$f(x) = x^2 - 10x + 24$$

A. $x = 2$ and $x = -12$

B. $x = 4$ and $x = 6$

C. $x = -4$ and $x = -6$

D. $x = -2$ and $x = 12$

5 Josh graphed the function $f(x) = 4x^2 - 12x - 40$. What are the x-intercepts of the graph?

A. $(4, 0)$ and $(5, 0)$

B. $(2, 0)$ and $(-5, 0)$

C. $(-2, 0)$ and $(4, 0)$

D. $(-2, 0)$ and $(5, 0)$

6 What are the zeros of the function below?

$$h(x) = 2x^2 - 12x + 18$$

A.   only $x = 3$

B.   only $x = -3$

C. $x = -3$ and $x = 3$

D. $x = 2$ and $x = 3$

7 What are the zeros of the function below?

$$f(x) = x^2 + 2x - 8$$

A.   –2 and 8

B.   –4 and 2

C.   –8 and 2

D.   –2 and 4

8 A faucet takes 6 minutes longer to fill an empty bathtub than a drain takes to empty the full bathtub. When the faucet is on and the drain is open, the full tub empties in 36 minutes. The quadratic equation below can be used to find t , the number of minutes the drain takes to empty the full bathtub when the faucet is on.

$$t^2 + 6t - 216 = 0$$

Which equation is equivalent to the above equation and BEST reveals the number of minutes the drain takes to empty the full bathtub?

A. $(t + 18)(t - 12) = 0$

B. $(t + 3)^2 - 207 = 0$

C. $(t + 3)^2 - 225 = 0$

D. $(t + 12)(t - 18) = 0$