Warm up

Identify the vertex, axis of symmetry, and x intercepts then Graph it!

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

$0 = -(x-3)^2 + 4$
$-4 \qquad -4$

$V = (3,4)$

$\dfrac{-4}{-1} = \dfrac{-(x-3)^2}{-1}$

$AS = 3$

$\sqrt{4} = \sqrt{(x-3)^2}$

$xint = 1, 5$

$2 = x - 3$
$+3 \qquad +3$
$5 = x$

$-2 = x - 3$
$+3 \qquad +3$
$1 = x$
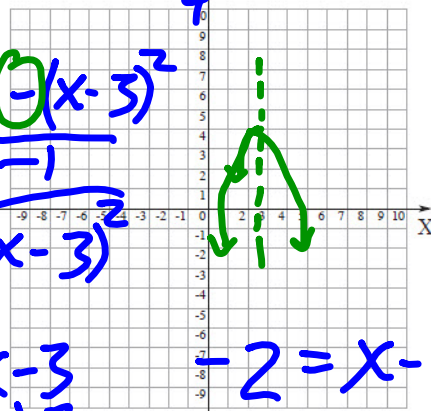
1. Jason jumped off of a cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function $h(t) = -16t^2 + 16t + 48$, where t is the time in seconds and h is the height in feet.

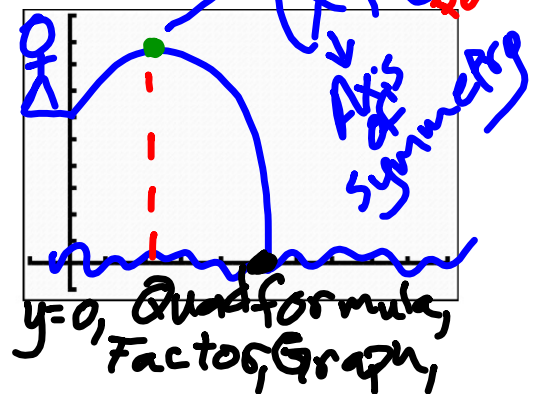   a. How long did it take for Jason to reach his maximum height?

   $$A. s = \frac{-b}{2a} = \frac{-16}{2(-16)} = \frac{1}{2} \text{ sec}$$

   b. What was the highest point that Jason reached?

   $$h\left(\tfrac{1}{2}\right) = -16\left(\tfrac{1}{2}\right)^2 + 16\left(\tfrac{1}{2}\right) + 48 = \boxed{52 \text{ ft}}$$

   c. Jason hit the water after how many seconds?

   Quad form

   MAX (x, y)

   FEET

   AXIS of symmetry

   $y = 0$, Quad formula, Factor, Graph,

2. If a toy rocket is launched vertically upward from ground level with an initial velocity of 112 feet per second, then its height h after t seconds is given by the equation $h(t) = -16t^2 + 112t$ (if air resistance is neglected).

How long will it take for the rocket to return to the ground?

Quad Formula

After how many seconds will the rocket be 100 feet above the ground?

$$100 = -16t^2 + 112t$$

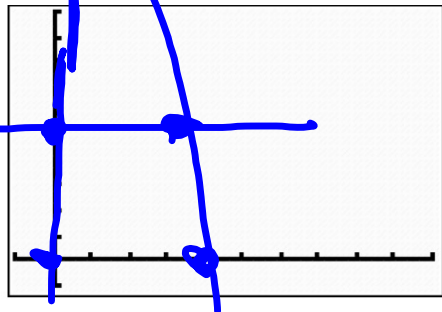How long will it take the rocket to hit its maximum height?

$$A.S = \frac{-b}{2a}$$

What is the maximum height?

$$h\left(\frac{-b}{2a}\right) = Y \qquad 100$$

Where is the maximum height and how do you find it?

where are the x-intercepts and how do you find them?

If I wanted to find the x values when the ball is 10 ft high how would I do it?

The Equation if this line is $h(t) = -16t^2 + 42t$