32. $7(x-4)^2 - 18 = 10$

$+18 \quad +18$

$\frac{7(x-4)^2}{7} = \frac{28}{7}$

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

$x - 4 = \pm 2$

$+4 \quad +4$

$x = 4 \pm 2$ → 6, 2

Suppose:

$\sqrt{(x-4)^2} = \sqrt{7}$

$x - 4 = \pm\sqrt{7}$

$+4 \quad +4$

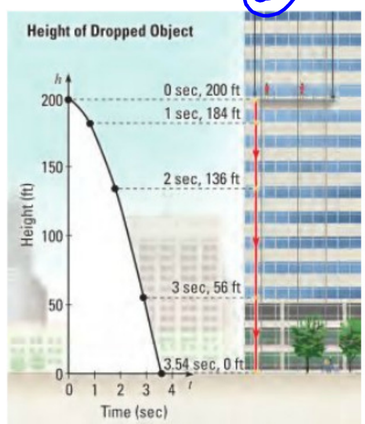
$x = 4 \pm \sqrt{7}$

MODELING DROPPED OBJECTS When an object is dropped, its height h (in feet) above the ground after t seconds can be modeled by the function

$$h = -16t^2 + h_0$$

where h_0 is the object's initial height (in feet). The graph of $h = -16t^2 + 200$, representing the height of an object dropped from an initial height of 200 feet, is shown at the right.

The model $h = -16t^2 + h_0$ assumes that the force of air resistance on the object is negligible. Also, this model works only on Earth. For planets with stronger or weaker gravity, different models are used (see Exercise 39).



38. **CLIFF DIVING** A cliff diver dives off a cliff 40 feet above water. Write an equation giving the diver's height h (in feet) above the water after t seconds. How long is the diver in the air?

$h = -16t^2 + h_0$

$h = -16t^2 + 40$

$0 = -16t^2 + 40$

$-40 \quad\quad -40$

$\frac{-40}{-16} = \frac{-16t^2}{-16}$

$\sqrt{2.5} = \sqrt{t^2}$

$1.6 = t$

sec.