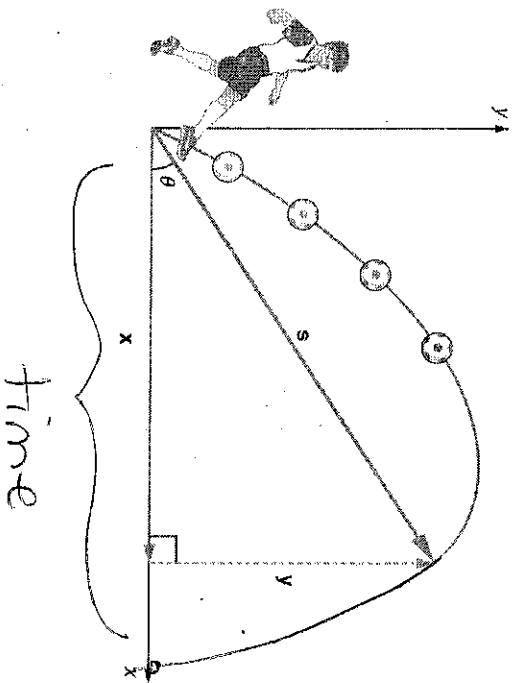


You are standing in the park and kick a ball straight up into the air. The ball travels at an initial velocity of 64 feet per second. The equation $h(t) = -16t^2 + 64t$ models the height of the ball (h) at any given time (t).

A: How long will the ball be in the air?



when height is 0

$$0 = -16t^2 + 64t$$

$$a = -16 \quad b = 64 \quad c = 0$$

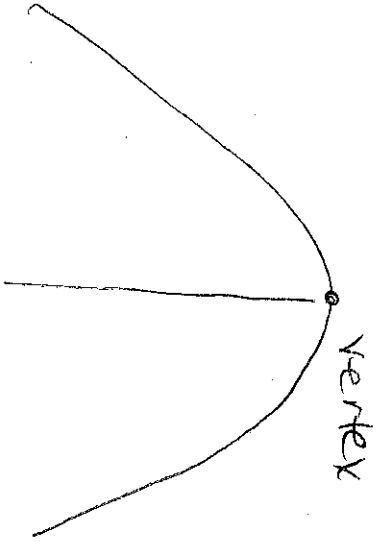
$$b^2 - 4ac$$

$$(64)^2 - 4(-16)(0) = 4096$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-64 \pm \sqrt{4096}}{2(-16)} = 4 \text{ sec}$$

B: When will the ball be at its maximum height?



$$x = -\frac{b}{2a} = \frac{-64}{2(-16)} = 2 \text{ sec}$$

C: How high does the ball get?

$$h(t) = -16(2)^2 + 64(2) = 64'$$