

Use the Quadratic Formula to solve each equation. Quadratic Formula: $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Round answers to the nearest hundredth where necessary.

1. $4x^2 - 9x - 7 = 0$

2. $8x + 3x^2 - 2 = 0$

3. A ball is thrown upwards from the top of an 37 foot ladder. The following equation models the height of the ball as a function of time.

$h(t) = -16x^2 + 120x + 37$

a) Find the maximum height of the ball and the time it takes to reach that height.

b) How much time will it take the ball to reach the ground?

Answers

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1. $4x^2 - 9x - 7 = 0$

2. $8x + 3x^2 - 2 = 0$

$b^2 - 4ac = 193$

$b^2 - 4ac = 88$

$x = \frac{9 \pm \sqrt{193}}{8} = 2.86, -0.61$

$x = \frac{-8 \pm \sqrt{88}}{6} = 0.23, -2.90$

3. A ball is thrown upwards from the top of an 37 foot ladder. The following equation models the height of the ball as a function of time.

$h(t) = -16x^2 + 120x + 37$

a) Find the maximum height of the ball and the time it takes to reach that height.

Vertex LOS: $t = \frac{-120}{-32} = 3.75$ $h(3.75) = 262$

b) How much time will it take the ball to reach the ground?

$0 = -16x^2 + 120x + 37$

$b^2 - 4ac = 16768$

$t = \frac{-120 \pm \sqrt{16768}}{-32} = -0.30, 7.80 \rightarrow$

max ht of 262 ft after 3.75 sec

Reaches ground in 7.80 sec