

3M Quad Quiz 1

Ryan hits a baseball into the air. He quickly throws the bat down so that he can determine the relation that will represent his ball as it travels through air. Its height h , in metres, after t seconds is $h = -4.9(t - 2.8)^2 + 39$.

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|--|----------------------------|
| a. What was the initial height of the ball? | <u>0.58 m</u> ✓✓ |
| b. What was the maximum height of the ball? | <u>39 m</u> ✓ |
| c. When does the ball fall to the ground? | <u>approx 5.62 sec</u> ✓✓✓ |
| d. Find the height of the ball after 1 second. | <u>23.12 m</u> ✓✓ |
| e. Find the time the ball was at its maximum height. | <u>2.8 sec.</u> ✓ |

$$\begin{aligned} \text{a) } h &= -4.9(0 - 2.8)^2 + 39 \\ &= 0.584 \end{aligned}$$

$$\begin{aligned} \text{c) } 0 &= -4.9(t - 2.8)^2 + 39 \\ \frac{-39}{-4.9} &= (t - 2.8)^2 \\ 2.8 \pm \sqrt{\frac{39}{4.9}} &= t \end{aligned}$$

$$\begin{aligned} t &= 2.8 + \sqrt{\frac{39}{4.9}} \quad \text{or} \quad t = 2.8 - \sqrt{\frac{39}{4.9}} \\ &= 5.62 \quad \quad \quad = -0.02 \\ & \quad \quad \quad \text{inadvis.} \end{aligned}$$

$$\begin{aligned} \text{d) } h &= -4.9(1 - 2.8)^2 + 39 \\ &= 23.12 \end{aligned}$$