



# Key Features of a Real Life Quadratic Relation

Video Notes

[Video Link](#)

# Key Features of a Real Life Quadratic Relation

## Background Info: Key Features of Quadratic Relations

A ball is thrown upward from a height of 2m at a rate of 12 m/s. The ball's height,  $h$ , with respect to time,  $t$ , is modeled by the equation

$$h = -4.9t^2 + 12t + 2$$

$h = \text{height (m)}$

$t = \text{time (sec)}$

Use graphing technology to graph a model of this situation and describe what the key features say about this situation.

Key features:

axis of symmetry, vertex, roots/x-intercepts, y-intercept

axis of symmetry:  $t = 1.224$

At 1.224<sup>seconds</sup>, the ball will reach its highest point

vertex:  $(1.224, 9.347)$

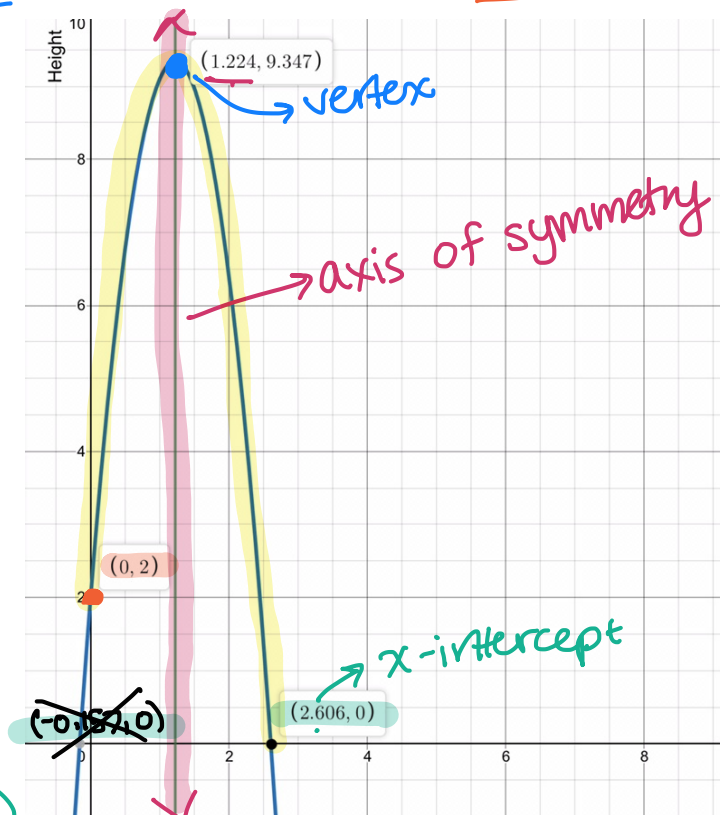
$\uparrow$   $\uparrow$   
 $t$   $h$

At 1.224 seconds, the ball will reach its highest point of 9.347 meters.

Roots/x-intercepts:

~~$\{-0.157, 2.606\}$~~   ~~$(-0.157, 0) + (2.606, 0)$~~

The ball will hit the ground after 2.606 seconds.



y-intercept:  $(0, 2)$

The initial height of the ball is 2 meters.