

## Example (Solutions):

In the game Angry Birds, a bird is pulled down, using the slingshot, shot off of the ground, misses its target and falls back to the grass. The path of the bird is as follows:  $h(t) = -t^2 + 6t$ , where  $h(t)$  represents the height in ~~feet~~<sup>meters</sup>, as a function of time,  $t$ , in seconds.

a) Label the x-axis and y-axis appropriately.

b) Why is the graph only in quadrant I?

No negative time or height

c) Find the: **domain:**  $\{t \mid 0 \leq t \leq 6, t \in \mathbb{R}\}$   
**range:**  $\{h(t) \mid 0 \leq h(t) \leq 9, h(t) \in \mathbb{R}\}$

d) State the **initial height** of the angry bird. 0 m

e) Where on the graph would you find the **maximum height**? vertex (3, 9)

f) What is the **maximum height**? 9 meters

g) At **what time** does the bird reach its maximum height? 3 seconds

h) Where on the graph does the angry bird **hit the ground**? 0 meters (6, 0)

i) At what time(s) does the angry bird hit the ground? 6 seconds

k) How high is the angry bird off the ground after 1 second?

$$h(1) = -(1)^2 + 6(1)$$

$$h(1) = -1 + 6$$

$$h(1) = 5$$

After 1 second, the angry bird is 5 meters off the ground.

