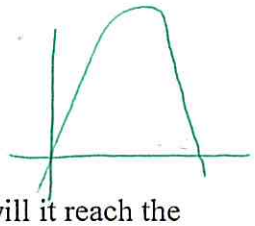
Alg 2 5.5 Solve Quadratics by Graphing **Name**_____ **HR**__\

Use a graph to solve.

1. A toy rocket is fired upward from the ground. The relation between its height h, in feet and the time t from launch, in seconds, can be described by the equation $h = -16t^2 + 64t$. Draw a sketch if the graph.

x = time (seconds) y = height (ft)



[0,10] by [0,100]

a) What is the maximum height the rocket will reach? At what time will it reach the maximum height? 64 feet 2 sec

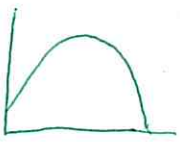
b) How long is the rocket in the air? 4 seconds

c) What is a reasonable domain and range for this model?

D [0,4] R [0,64]

2. An archer's arrow follows a path described by the equation $y = -.005x^2 + 2x + 5$. Draw a sketch of the graph. use feet + seconds

x = time (sec) y = height (feet)



[-10,500] by [-10,300]

a) What is the maximum height the ~~rocket~~ arrow will reach? At what time will it reach the maximum height? 200 ~~feet~~ sec 205 feet

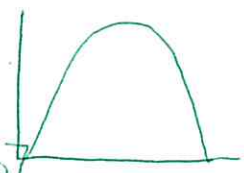
b) How long is the ~~rocket~~ arrow in the air? 402.48 sec

c) What is a reasonable domain and range for this model?

[0, 402.84] R [0, 205]

3. The expression $P(x) = 2500x - 2x^2$ describes the profit of a company that customizes bulldozers when it customizes x bulldozers in a month. Sketch the graph.

x = # of bulldozers y = profit ($) $-2x(x-1250)$



[-10,2000] by [-10,900,000]

a) What is the maximum profit in a month? How many bull dozers must they sell to reach the max? $781,250 625 bulldozers

b) What is the range and domain?

D [0, 1250] R [0, 781,250]

4. Graph the following equation. $y = 4x^2 + 3x - 1$.

a) Find the vertex $(-3/8, -25/16)$

b) Find the x intercepts. What do they represent? The solutions

(1/4, 0) (-1, 0) are $x = 1/4$ $x = -1$