

*AAT

Chapter 9: Tasks #1-4 (IC)

Name: Key

Date: _____ Period: _____

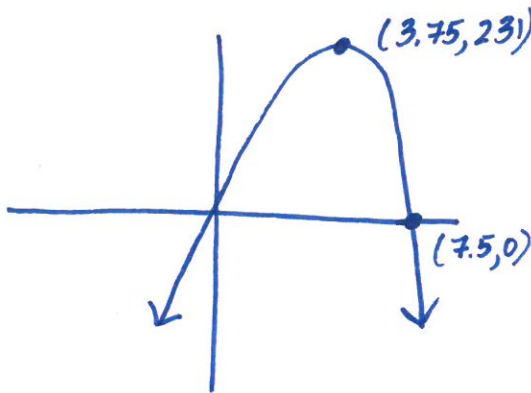
Task #1:

Luis threw a baseball straight up at an initial velocity of 120 feet per second. Luis is 6 feet tall. The height of a ball is a function of the time, t , that it was thrown and can be found using the following equation:

$$H(t) = -16t^2 + v_1t + h_1$$

How high did Luis's throw go, and how long did it stay in the air? Create a graph for this situation.

$$y = -16x^2 + 120x + 6$$



* max height : 231 ft. @ 3.75 seconds

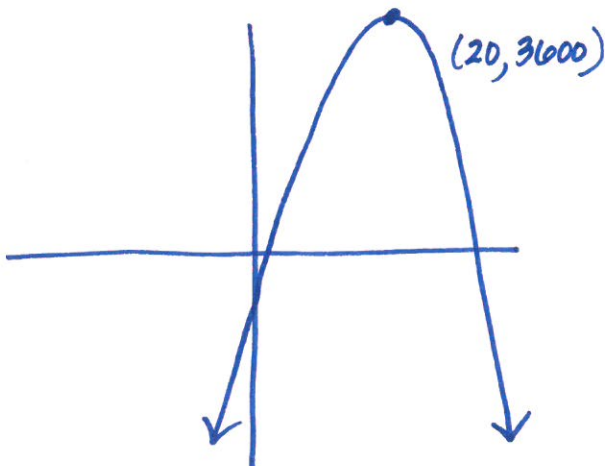
* ball in air : 7.5 seconds

Task #2:

Maximilian and Minerva have harvested 10,000 pounds of potatoes this fall. They know that they can sell them now for \$0.20 per pound. They also know that the price is likely to go up approximately \$0.02 per week if they wait to sell. If they wait to sell, however, it is quite possible that they'll lose approximately 200 pounds of potatoes per week due to spoilage and animals munching. When should they sell to maximize their income for their potatoes? Sketch a graph of the relationship and explain your thinking.

$$\text{Income} = \text{price} * \text{quantity}$$

$$I = (.20 + .02x)(10,000 - 200x)$$



of weeks

of weeks

* $x = 20$ weeks for maximum \$3600

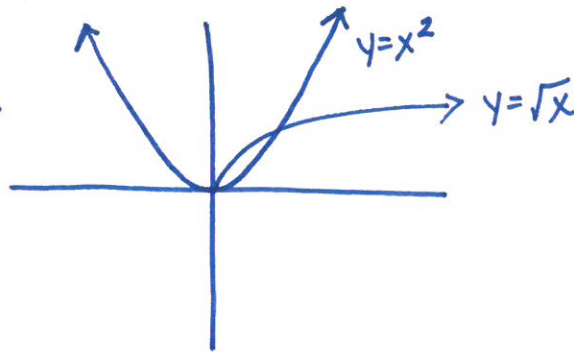
Task #3:

1. Graph the functions $y = x^2$ and $y = \sqrt{x}$ together in the same convenient window. Then compare the graphs. How are they alike? How are they different?

alike

* both are parabolic functions

* both have vertex $e(0,0)$

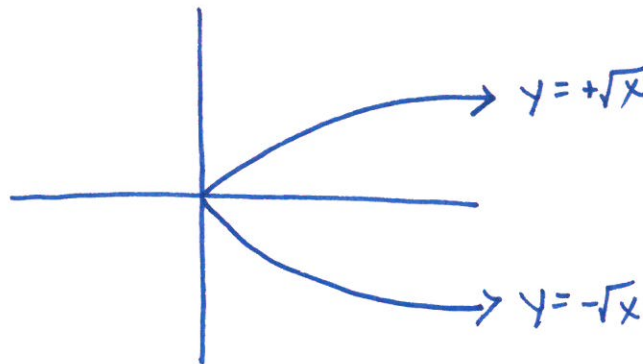


different

* One opens up, other opens right

* One is complete, other is top half only

2. What would the graph of $y = \pm \sqrt{x}$ be like? Would this graph still be a function? Why or why not?



* Not a function b/c it doesn't pass v. line test

Task #4:

How much do you know about quadratic functions? Without graphing, discuss how many, if any, x-intercepts each quadratic function has. (Hint: Find the discriminant ☺)

$$b^2 - 4ac$$

1. $f(x) = x^2 + 3x + 4$ $D = -7$; No x-int \rightarrow 2 imag. roots

2. $f(x) = x^2 + 3x - 4$ $D = 25$; 2 x-int \rightarrow 2 real roots

3. $f(x) = 9x^2 - 6x + 1$ $D = 0$; 1 x-int \rightarrow 1 real D.R.