Mastery Algebra 1 Sample Mastery Quiz 9-2 Name: KEY

Per: ____ ☐

9-2 Quadratic Functions

1. Suppose Daniel kicks a soccer ball up into the air with an initial velocity of 64 feet per second, and the ball is 2 ft above the ground when it is kicked. The formula that describes the height of the ball at any time t is $h = -16t^2 + 64t + 2$

a. What is the equation of the axis of symmetry for this function?

$x = \frac{-64}{2(-16)} = \frac{-64}{-32} = 2$

$x = 2$

b. What are the coordinates of the vertex for this function?

$y = -16(2)^2 + 64(2) + 2$
$= -64 + 128 + 2$
$= 66$

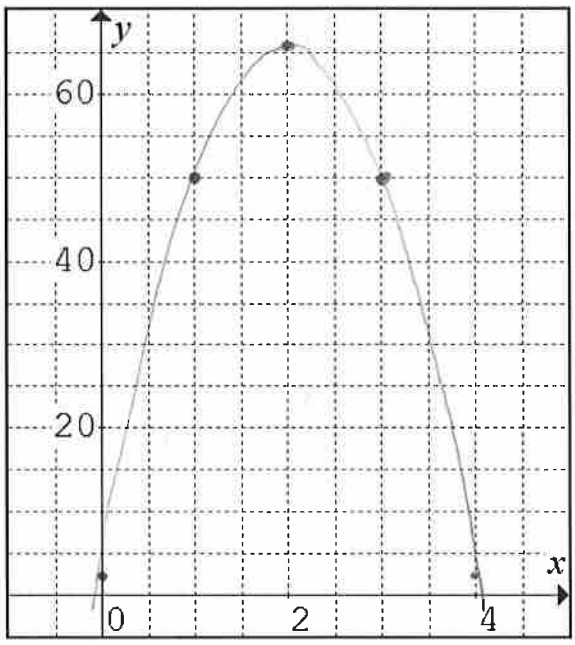
(2, 66)

c. Choose appropriate values for x and complete the table below (min 5 points):

t	$h = -16t^2 + 64t + 2$	h
0	$-16(0)^2 + 64(0) + 2$	2
1	$-16(1)^2 + 64(1) + 2$	50
2	$-16(2)^2 + 64(2) + 2$	66
3	$-16(3)^2 + 64(3) + 2$	50
4	$-16(4)^2 + 64(4) + 2$	2
5	$-16(5)^2 + 64(5) + 2$	-78

vertex

d. Use your points to graph the function.



e. What is the maximum height of the ball, and how long does it take to reach that height?

It takes 2 seconds for the ball to reach its maximum height of 66 ft.