

Name: _____

Key
Final Review - Part 2

Date: _____ Per _____

1.

During the civil war cannons were set up on the battlefield hills and positioned to take out enemy trenches. The flight of a cannonball is modeled by the equation below, where "h" is the height of the cannonball during flight, and "d" is the horizontal distance the cannonball travels. All distances in feet. Using the graphing calculator, answer the questions below:

$h = -.0015d^2 + 1.15d + 2.1 \rightarrow$ Graph in $y = -.0015x^2 + 1.15x + 2.1$

A. What was the maximum height of the cannonball during flight?

(2nd) (calc) maximum

222.517 ft

B. How far was the cannonball above ground before being fired?

2.1 ft or c $ax^2 + bx + c$

C. At what distance from being fired, did the cannonball hit the ground?

(2nd) (calc) zero

768.488 ft

window

$x_{min} = -10$

$x_{max} = 800$

$y_{min} = -10$

$y_{max} = 250$

2.

A model rocket is launched from the top of an observation tower. The height (h) of the rocket is in feet and is determined by the equation below, where time (t) is in seconds from launch. **Round answers to 1 decimal place!**

$h(t) = -3t^2 + 54t + 65 \rightarrow$ Graph in $y = -3x^2 + 54x + 65$ window

a. What is the maximum height the rocket will attain after launch?

Maximum Height: 308 ft

Same as 1A
vertex/
max: (9, 308)

$x_{min} = -10$

$x_{max} = 40$

$y_{min} = -10$

b. How long will it take for the rocket to reach its maximum height?

Time to reach Max Height: 9 seconds

x coordinate
of maximum
(9, 308)

$y_{max} = 400$

c. What is the height of the rocket 13 seconds after being launched?

Height at 13 seconds after launch: 260 ft

table
where $x = 13$