

see answers below

Graph in desmos to answer these questions

1. The path of a rocket is given by $h = -16t^2 + 128t$, which shows the height, h , of the rocket t seconds after it is launched.

- a. How long is the rocket in the air? *x-int to x-int*
- b. What is the maximum height the rocket reaches? *find max y-value (vertex)*
- c. What is the height of the rocket after 1 second? *plug in 1 for x*
- d. What is the height of the rocket after 2 seconds? *plug in 2 for x*

2. A rocket follows the path represented by the equation: $h = -16t^2 + 64t + 80$, where h is the height of the rocket after t seconds.

- a. What is the maximum height reached by the rocket? *find max y-value (vertex)*
- b. How many seconds after it is launched does it hit the ground? *x-int to x-int*

3. The profit made by a company is represented by the equation $y = -3x^2 + 18x - 4$, where y is the profit, in millions of dollars, and x is the number of years the company has been in operation. The CEO wants to sell the company before it goes into debt.

- a. When will the company show its maximum profit? *max x-value (vertex)*
- b. What is the maximum profit? *max y-value (vertex)*
- c. After how much time does the CEO need to sell the company? *after x-int*

4. Aubrey throws a rock into the air from the top of a cliff. The rock's path is described by the equation $y = -4.9x^2 + 19x + 300$, where y represents the height in meters and x represents the time in seconds.

- a. To the nearest second, how long is the rock in the air? *x-int to x-int*
- b. What is the maximum height of the rock? *max y-value (vertex)*

5. The profit for selling concert tickets depends on the price of the ticket. The profit, p , can be modeled by the equation $p = -15x^2 + 600x + 60$, where x is the price of a ticket.

- a. What price gives the maximum profit? *max x-value (vertex)*
- b. What is the maximum profit? *max y-value (vertex)*

6. Find the quadratic regression equation for the data below and predict the weight of a 75-inch tall person.

Height (in)	61	63	65	67	69	72	73
Weight (lb)	160	170	180	190	200	220	230

use desmos to make a quadratic regression

Answers:

1. a. 8 seconds, b. 260 ft, c. 112 ft, d. 192 ft.

2. a. 144 ft, b. 5 sec

3. a. 3 years, b. 23 million, c. 5.8 years

4. a. 10 sec, b. 318.418 m

5. a. \$20, b. \$6060

6. $y = 0.140x^2 - 13.133x + 440.803$; 286.55