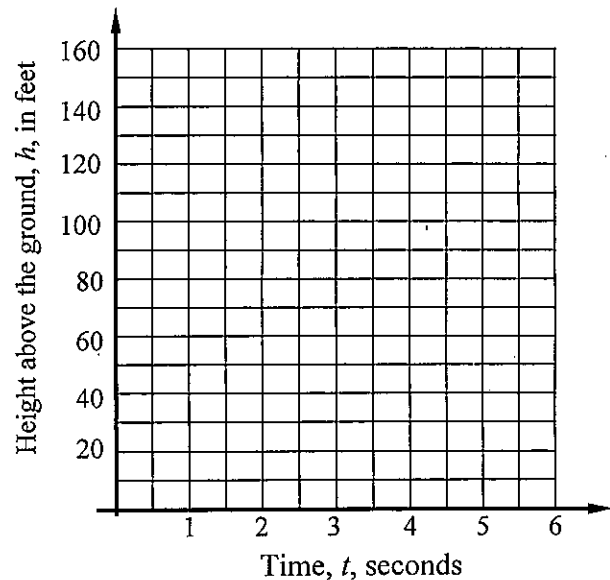


APPLICATIONS

6. The height of an object that is traveling through the air can be well modeled by a quadratic function that opens downward. An object is fired upward and its height in feet above the ground is given by:

$$h(t) = -16t^2 + 64t + 80 \quad \text{where the input, } t, \text{ is the time, in seconds, the object has been in the air}$$

- (a) Using your calculator, sketch a graph of the object's height for all times where it is at or above the ground.



- (b) What is its maximum height in feet?
- (c) At what time does it hit the ground?
- (d) Over what time interval is its height increasing?

7. The cost per computer produced at a factory depends on how many computers the factory produces in a day. The cost function is modeled by $C(n) = \frac{1}{500}n^2 - n + 200$, where n is the number of computers produced in a day and $C(n)$ is the unit cost, in dollars per computer.

- (a) Calculate $C(50)$ and give an interpretation of your answer in terms of the scenario described.
- (b) Does the cost have a minimum or maximum value? Explain. Use your calculator to find it.

- (c) Based on (b), can this function have any real zeroes? Explain your thought process.

