

Functions

Unit 4: Relations and Functions

4.5 Analyzing Graphs

"Lisa purchases a new car for \$20 000. The value of the car can be represented by the formula $V = 20\,000 - 1250t$, where V is the value of the car in dollars and t is the age of the car in years."

- a) • Graph $V = 20\,000 - 1250t$ using a graphing calculator.
 - Use the ZoomFit feature as a guide to adjust the graphing window. Then use the Window key to align the graph appropriately for this scenario. Write the window setting below.
 - Sketch the graph on the grid provided.
- b) Calculate the t -intercept of the graph using a graphing calculator, and label it on the sketch. Describe what this value represents in the context of the question.
- c) Calculate the V -intercept of the graph using a graphing calculator, and label it on the sketch. Describe what this value represents in the context of the question.
- d) Use the trace feature of a graphing calculator to determine what the car will be worth in 5 years.
- e) Use the intersect feature of a graphing calculator to determine when the car will be worth half of the purchase price. Illustrate this on your sketch.
- f) Write an appropriate domain and range for the function which describes the value of the car over time.

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Class Ex. #2

The height of a human cannon ball, "Cano", can be described by the formula $h = 12 + 6t - t^2$, where h is the height in metres above ground level and t is the time in seconds. Cano is projected out of a cannon from the top of a building and lands on a soft mat. The mat is placed in a hole in the ground so that the top of the mat is level with the ground.

- a) Display the graph of $h = 12 + 6t - t^2$ on a graphing calculator.
- b) Write down a window setting which would be appropriate for this situation.
- c) Sketch $h = 12 + 6t - t^2$ on the grid provided.
- d) What is the height of the cannon above the ground?
- e) What is the maximum height Cano reaches?
- f) How many seconds does it take Cano to reach the highest point on the path he is travelling?
- g) To the nearest hundredth of a second, how long does it take Cano to land on the mat?
- h) How high is Cano one second after he is launched?
- i) When will Cano be at the height in h) again?
- j) In words, describe the relation connecting height and time.
- k) Write an appropriate domain and range for the relation described in j).

