

Directions: For each scenario below, determine whether the two variables have a positive rate of change or a negative rate of change.

1. The amount of money in a vending machine versus the number of items remaining inside the vending machine.

2. The number of days since the flu season began versus the number of people that have caught the flu.

3. The number of years since 2000 versus the number of Tesla's on the road.

4. The number of miles driven since last filling up a gas tank versus the amount of gas left inside the tank.

x	.5	.8	.9	.99	1.01	1.1	1.2	1.5
$g(x)$								

5. The function g is given by $g(x) = 2x^3 - 5.6x + 3$.

a) Use your graphing calculator to find the values of g for the x -values indicated in the table above.

b) Use your graphing calculator to find the average rates of change of g over the following intervals. Be sure to show your set up for your computations.

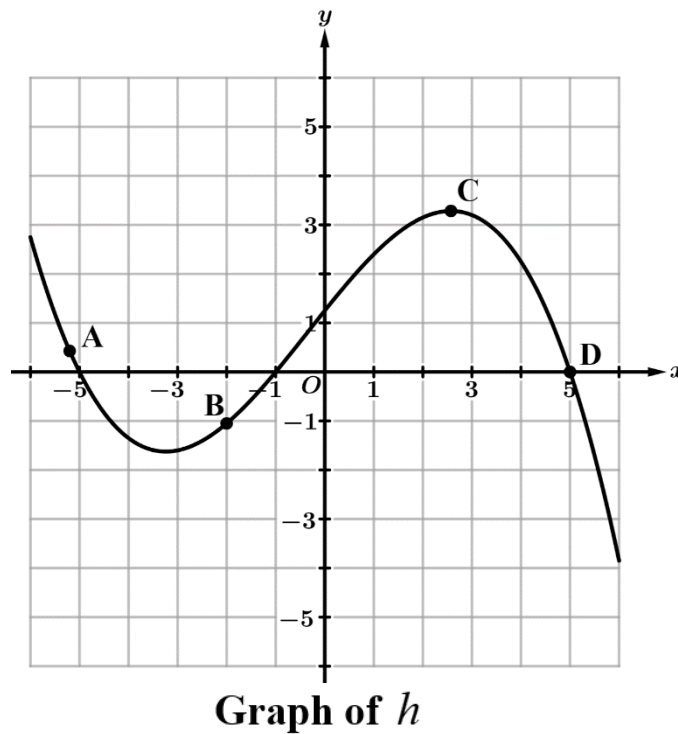
$$[.5, 1.5]$$

$$[.8, 1.2]$$

$$[.9, 1.1]$$

$$[.99, 1.01]$$

c) Based on the average rates of change from part b), what do you think is the rate of change of g when $x = 1$? Give a reason for your answer.



6. The graph of h is shown above along with four points A, B, C, and D.

a) Sketch a line tangent to the graph of h at the four points indicated on the graph.

b) Order the rates of change of the graph of h from least to greatest at the points A, B, C, and D.

7. For each of the following statements about the graph of h shown above, circle the correct answer and the correct reasoning.

a) From point A to point B, the rate of change of h is increasing/decreasing because the graph of h is concave up/concave down over that interval.

b) From point B to point C, the graph of h is increasing/decreasing because the rate of change of h is positive/increasing over that interval.

c) From point C to point D, the rate of change of h is increasing/decreasing because the graph of h is decreasing/concave down over that interval.