HAPC
Unit 1
1.2 Worksheet: Rates of Change

Name: _____

Hour: _____ Date: _____

Directions: Find the average rate of change for the following functions on the given intervals. Show all wo

1. $f(x) = x^2$ on $[-3, 3]$

$\frac{9+9}{6}$ 3

2. $g(x) = 8 - 3x$ on $[1, 6]$

$\frac{18}{-10-5}$ $\frac{-15}{5}$ -3

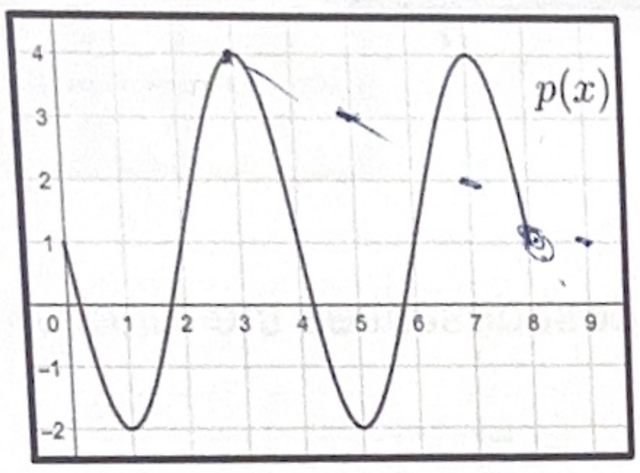
3. $h(x) = \sqrt{x^3 + 1}$ on $[-1, 2]$

$\frac{3}{3}$ 1

4. $k(x) = \frac{6x}{x-1}$ on $[2,4]$

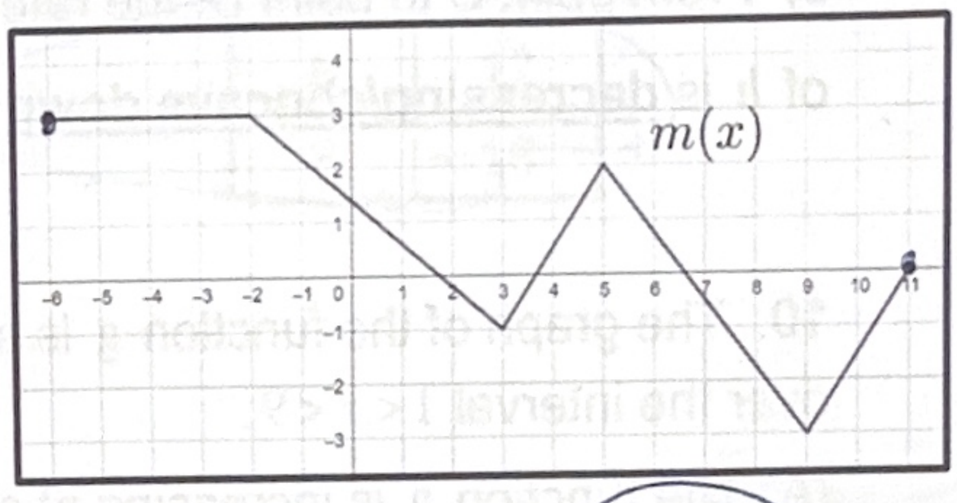
$\frac{12}{1}$ $\frac{24}{3}$ $\frac{-4}{2}$ $8-12$ -2

5. $p(x)$ on $[3, 8]$



$1-4$ $-\frac{3}{5}$

6. $m(x)$ on $[-6, 11]$



$-\frac{3}{17}$

7. Selected values for the function $g(x)$ are shown in the table above. Find the average rate of change for $g($ $x = -2$ to $x = 9$.

x	-2	5	9	11
$g(x)$	4	-1	1	8

$\frac{1-4}{9+2}$ $\frac{-3}{11}$

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

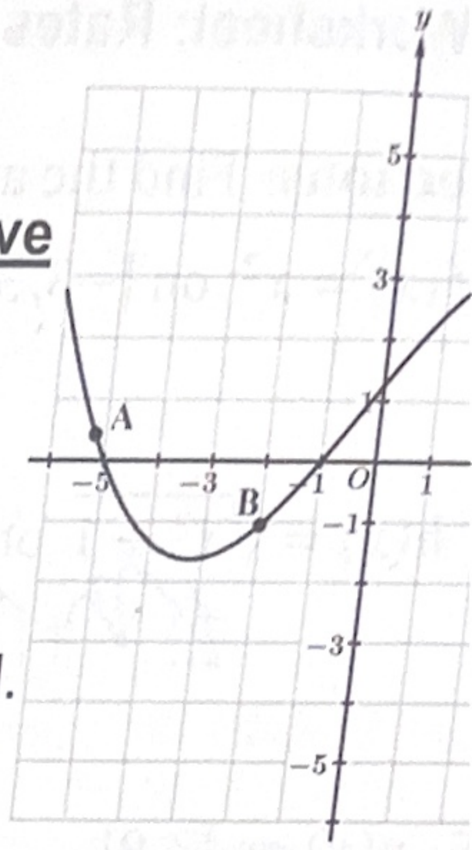
a) The amount of money in a vending machine versus the number of items remaining inside the vending machine.

(—) negative

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

+ positive

9. For each of the following statements about the graph of h shown to the right, circle the correct answer and the correct reasoning.

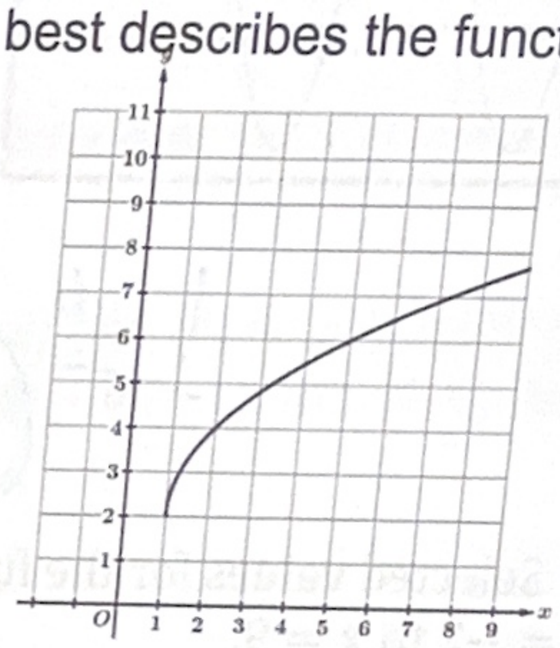


a) From point A to point B, the rate of change of h is **increasing/decreasing** because the graph of h is **concave up/concave down** over that interval.

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.

10. The graph of the function g is shown. Which of the following best describes the function g over the interval $1<x<9$.



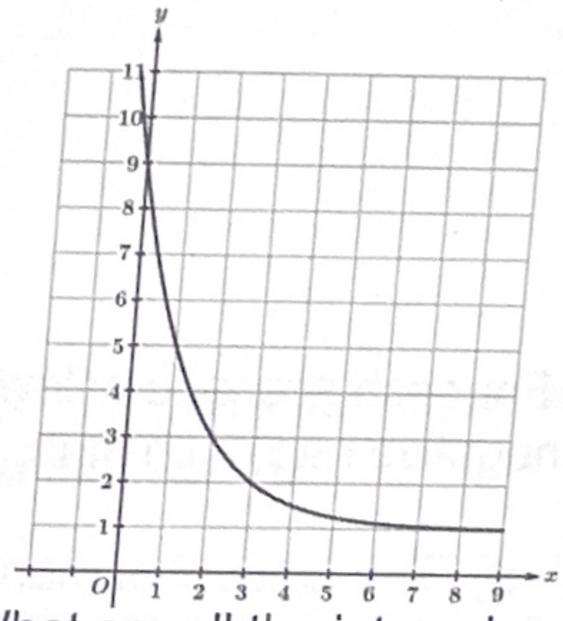
(A) The function g is increasing at an increasing rate.

(B) The function g is increasing at a decreasing rate.

(C) The function g is decreasing at an increasing rate.

(D) The function g is decreasing at a decreasing rate.

11. The figure shows the graph of a function h. Which of the following statements about h is true?



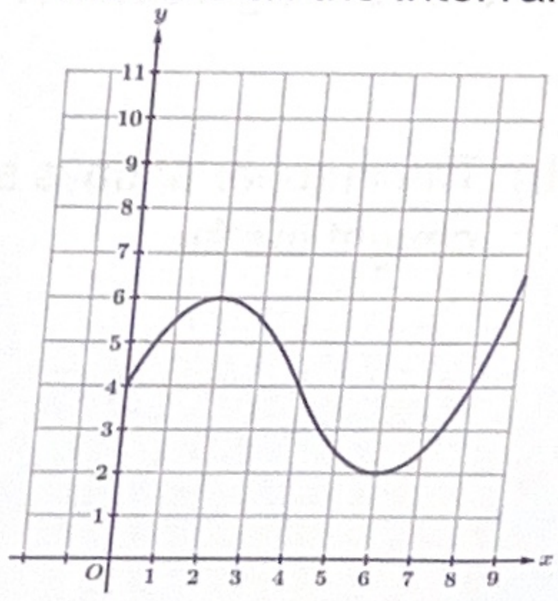
(A) The function h is negative.

(B) The function h is increasing.

(C) The rate of change of h is positive.

(D) The rate of change of h is increasing.

12. The graph of a function k is shown in the figure for $0\le x\le 9$. What are all the intervals of x on which the rate of change of k is negative and decreasing?



(A) $(2, 6)$

(B) $(0, 4)$

(C) $(2, 4)$

(D) $(4, 6)$