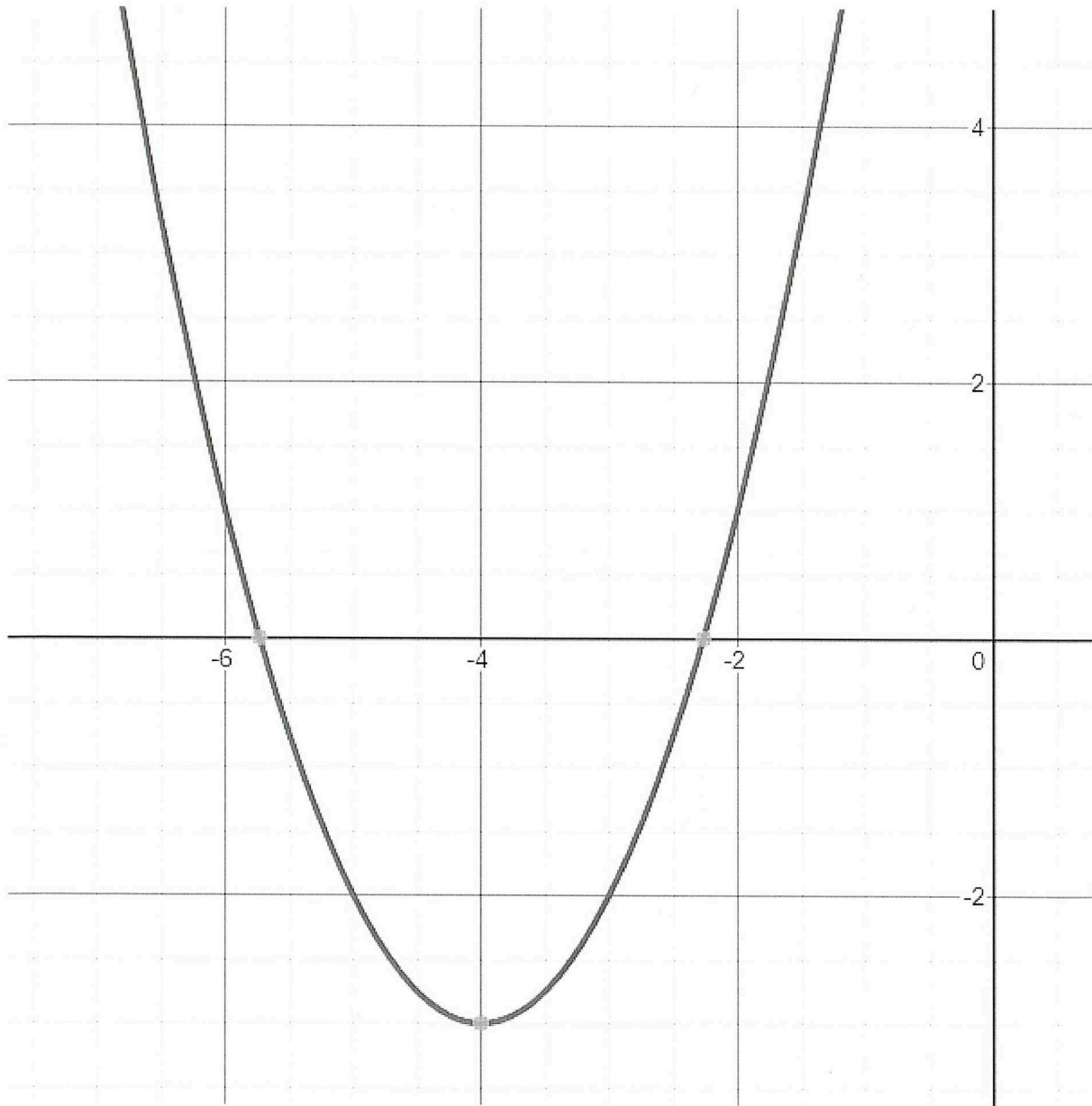


Unit 2 family of Functions

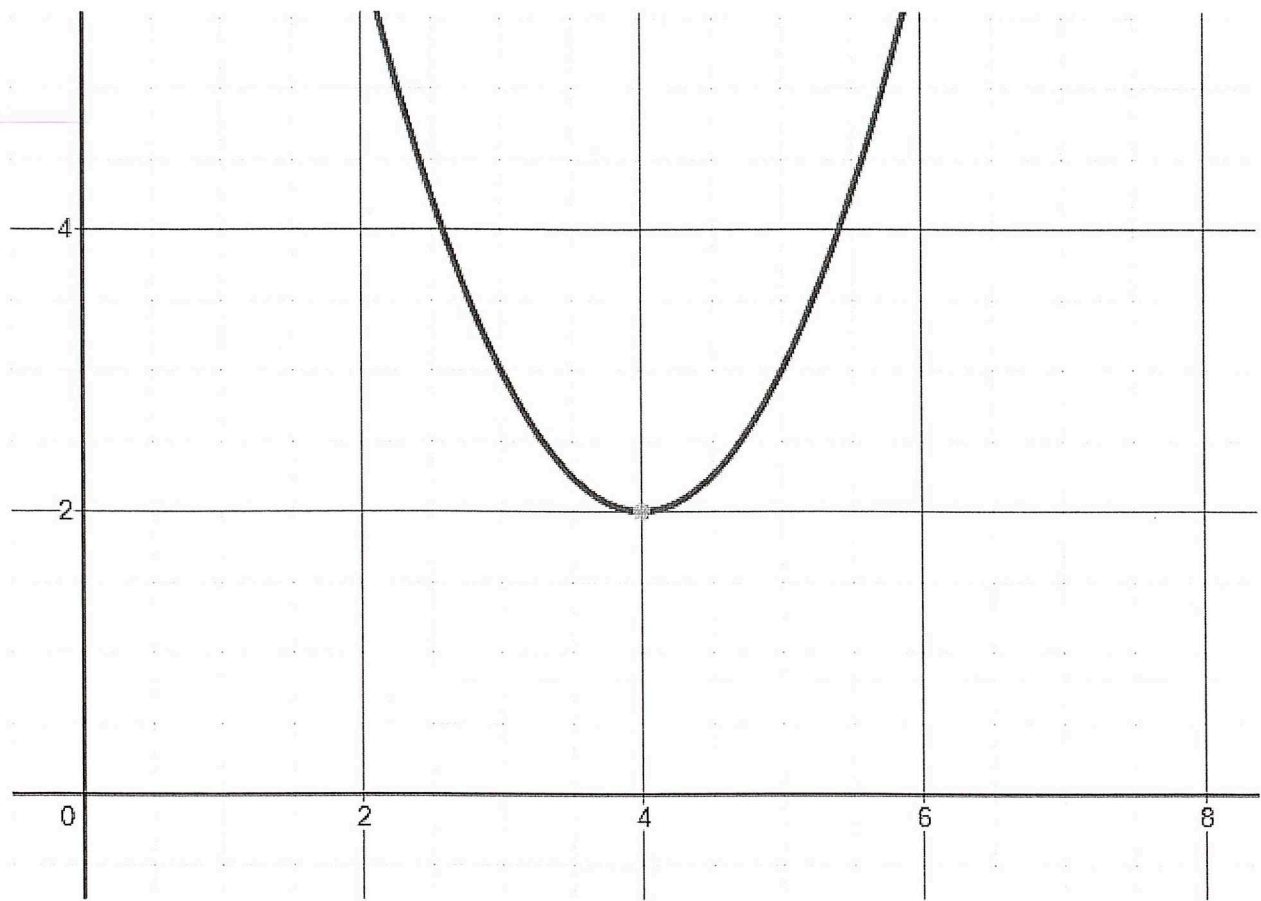
Test review #3

Write the equation of the following graphs:



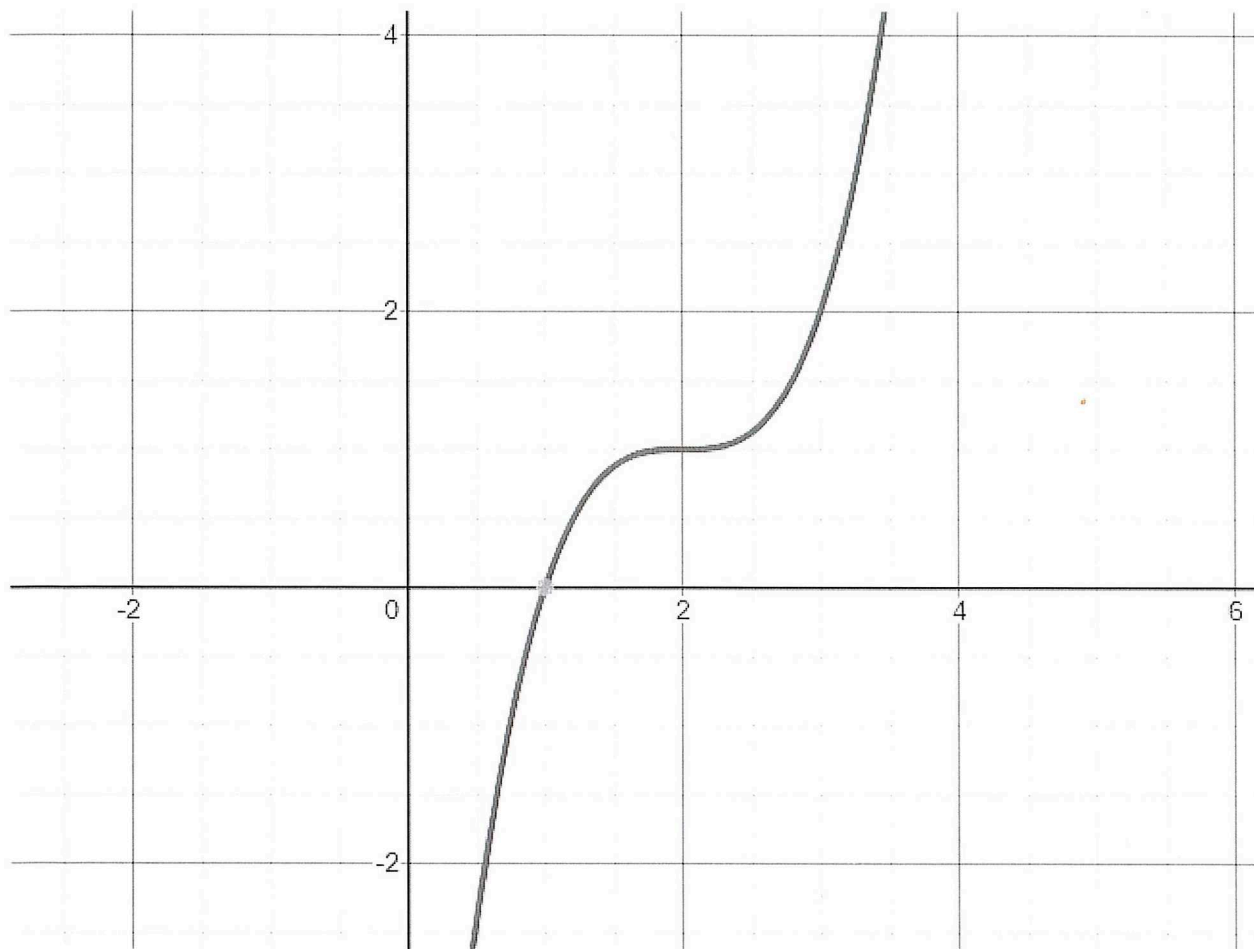
Equation:

$$y = (x+4)^2 - 3$$



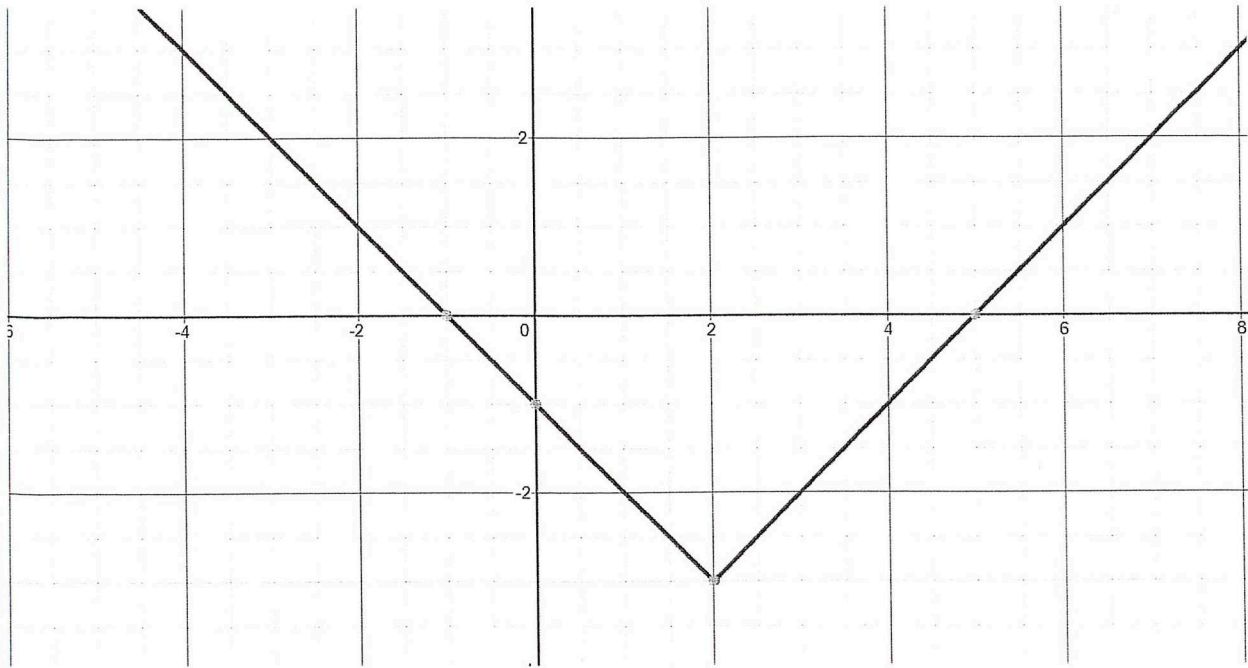
Equation:

$$y = (x - 4)^2 + 2$$



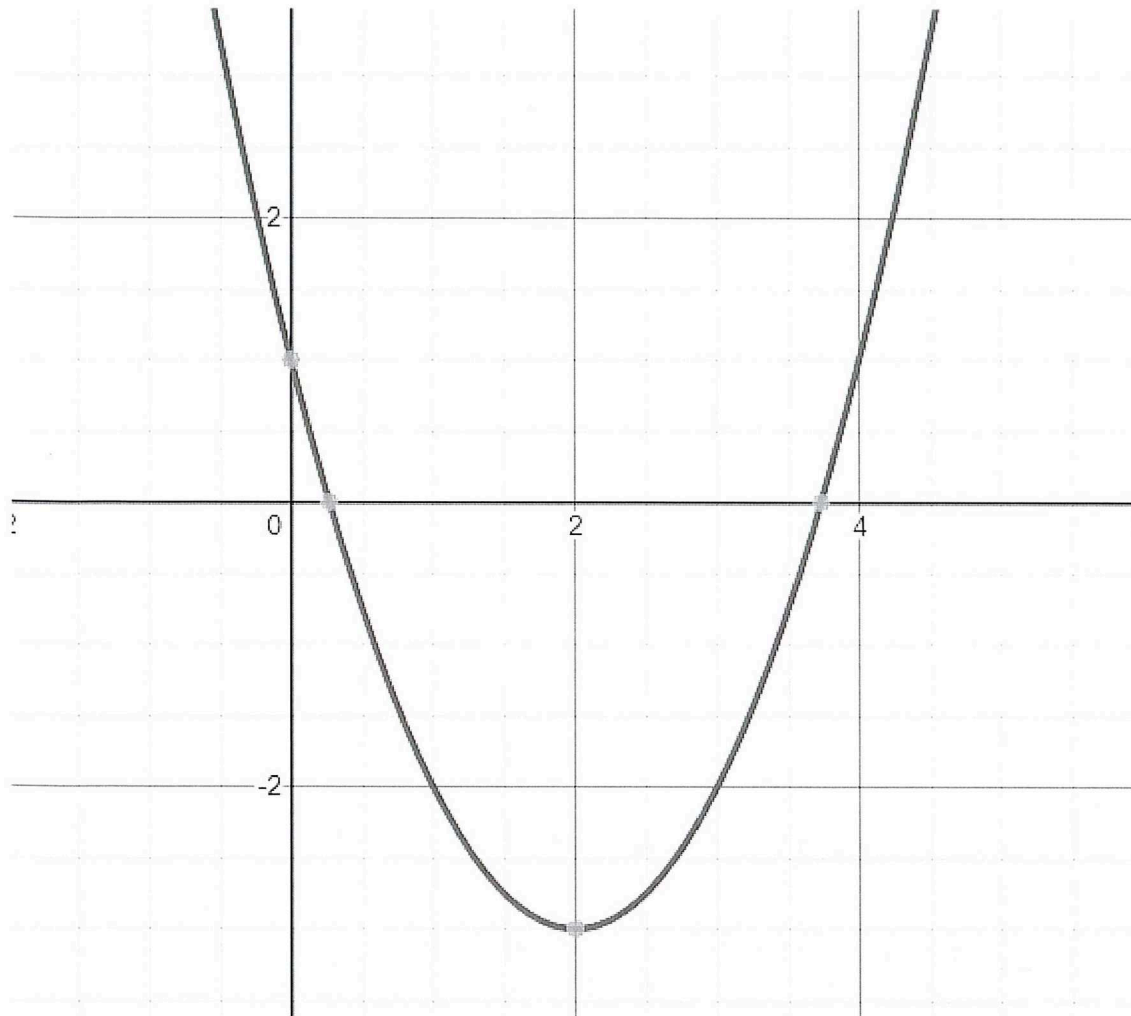
Equation

$$y = (x-2)^3 + 1$$



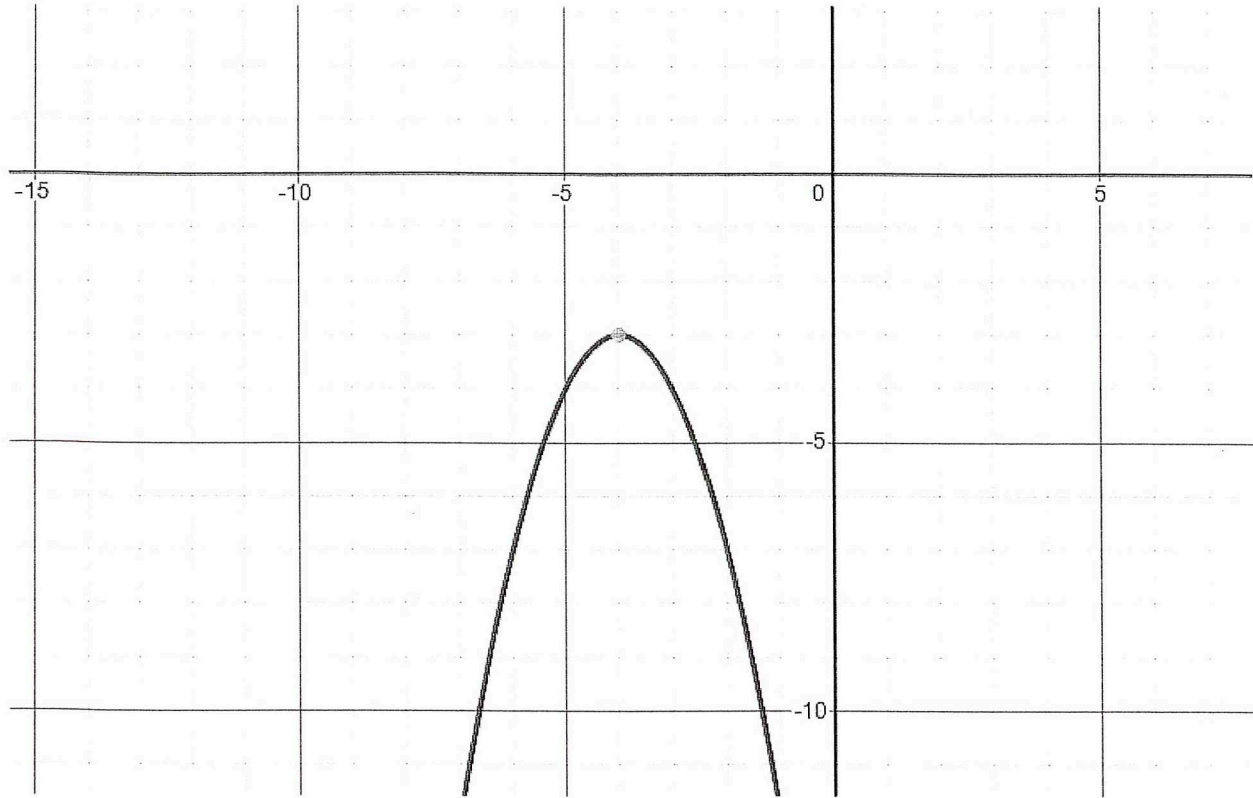
Equation:

$$y = |x - 2| - 3$$



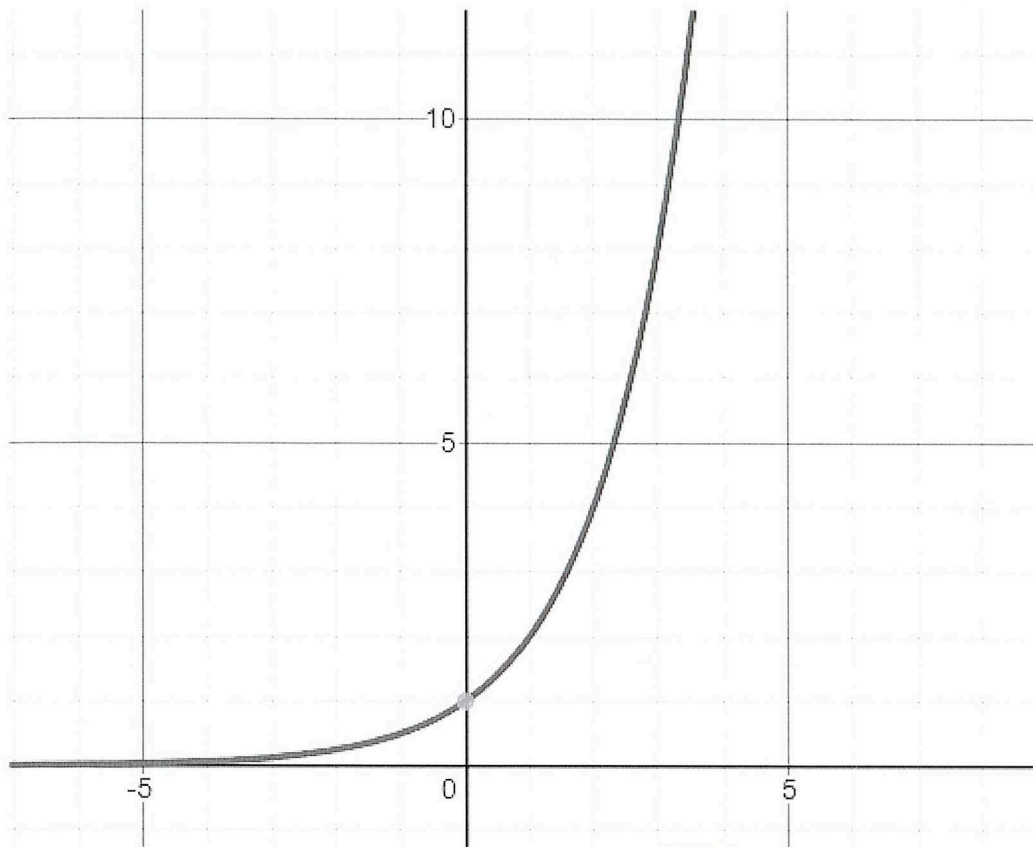
What is true about the rate of change of this graph when $-50 < x < 2$

A	B	C	D
The rate of change is constant	The rate of change is decreasing	The rate of change is increasing	The rate of change is positive



What is true about the rate of change of this graph when $-5 < x < -4$

A	B	C	D
The rate of change is constant	The rate of change is decreasing	The rate of change is increasing	The rate of change is negative



What is true about the rate of change of this graph when $0 < x < 20$?

A	B	C	D
The rate of change is constant	The rate of change is decreasing	The rate of change is increasing	The rate of change is negative

I Know what the translation rules do to a graph

Describe what this general translation does to the original graph

$$y = af(x-h) + k$$

Write your description here:

a is a stretch or shrink. It makes the graph skinny or fat.
 h moves the graph left or right
 k moves the graph up or down

I know function notation:

Given $f(x) = -2x^2 - 16$, what is $f(-3)$?

Write your answer here:

$$-34$$

What is x when $f(x) = -88$?

Write your answer here:

$$\pm 6$$

I can find composition of functions:

Given $f(x) = 2x - 5$ and $g(x) = x^2$

Find $f \circ g$

$$f(x^2)$$

Write your answer here

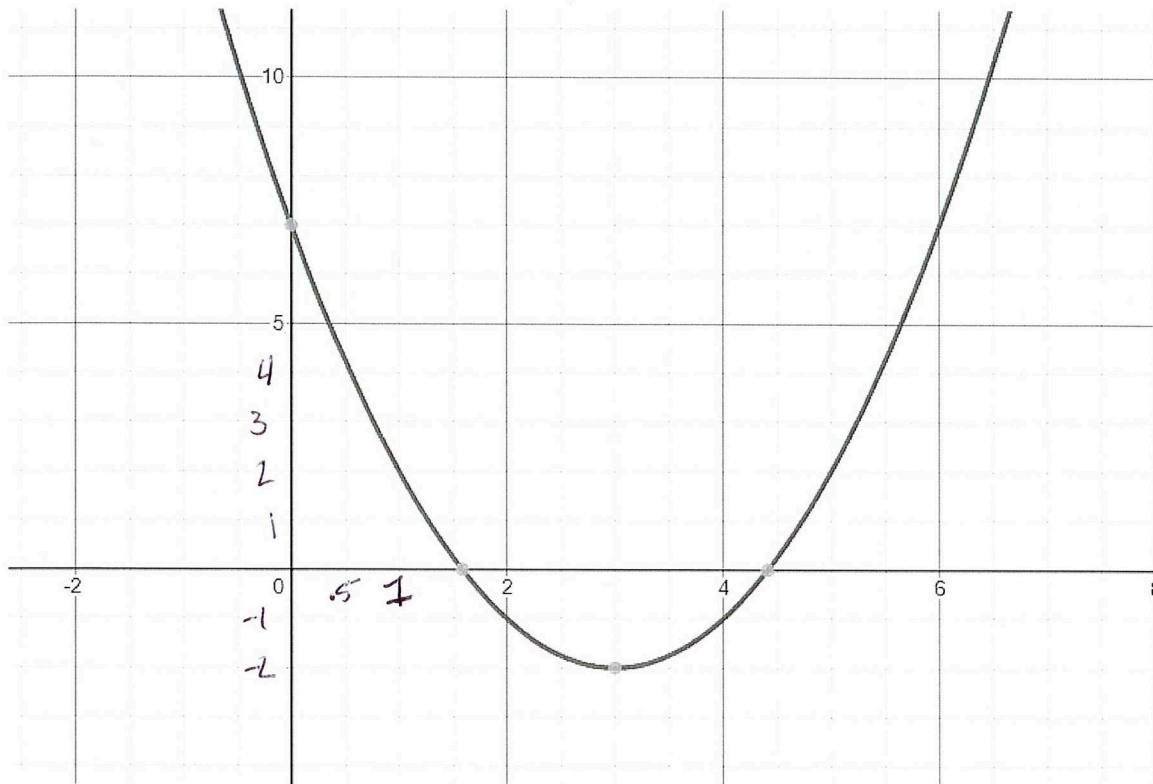
$$2x^2 - 5$$

Find $g \circ f$

$$g(f(x))$$

Write your answer here

$$(2x - 5)^2$$



You should be able to use algebra to find the equation and be exact with your answers...not just reading the graph.

a) State the y intercept (0, 7)

b) State the x intercept 4.41 and 1.59

c) Does this function have a maxima or minima? If so identify them

Min at $x = 3$

d) Using proper math terminology what is the domain?

All Real #'s

e) Using Proper math terminology what is the range?

All Real #'s $y \geq -2$

f) For what x values is f(x) increasing?

g) For what x values is f(x) decreasing?

$-\infty < x < 3$

$$y = (x-3)^2 - 2$$

$$(x-3)^2 - 2 = 0$$

$$(x-3)^2 = 2$$

$$x-3 = \pm\sqrt{2}$$

$$x = 3 \pm \sqrt{2}$$

$$4.41 \quad 1.59$$

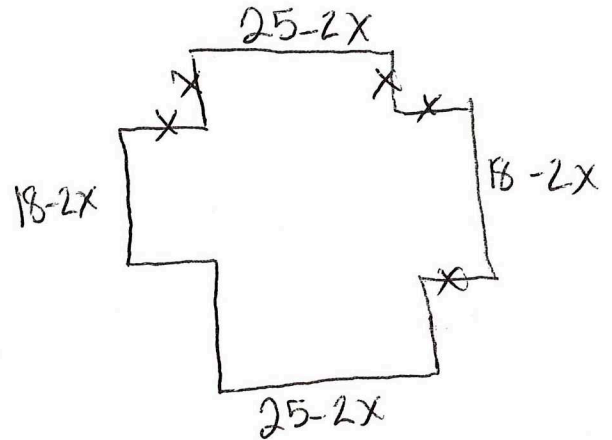
You start with a 18 By 25 inch piece of paper. You will be making an open top box by cutting square flaps from each side.

1) Write the function that models this scenario

$$V(x) = x(18-2x)(25-2x)$$

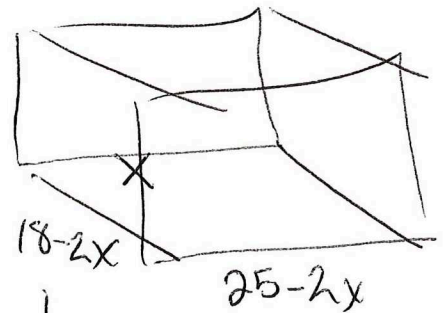
2) What family of functions does this belong to?

Cubic



3) What are the x intercepts...there should be 3

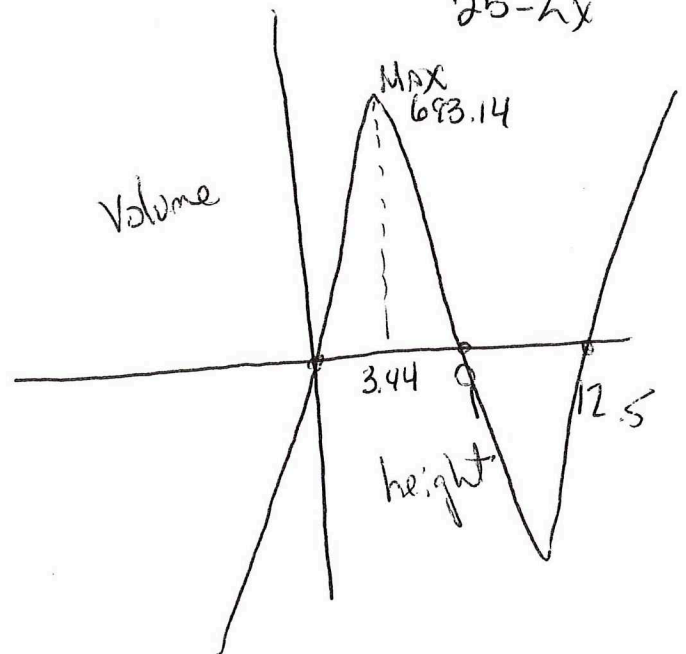
0, 9, 12.5



4) What is the real life domain of this problem

$0 < x < 9$

5) Sketch the graph

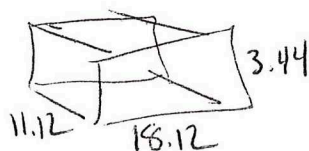


6) What is the maximum volume?

693.14 in³

7) What are the dimensions of the open top box that has the most volume?

$h = 3.44$
 $w = 11.12$
 $l = 18.12$



$$18 - 2(3.44) = 11.12$$

$$25 - 2(3.44) = 18.12$$