CHECK HOMEWORK
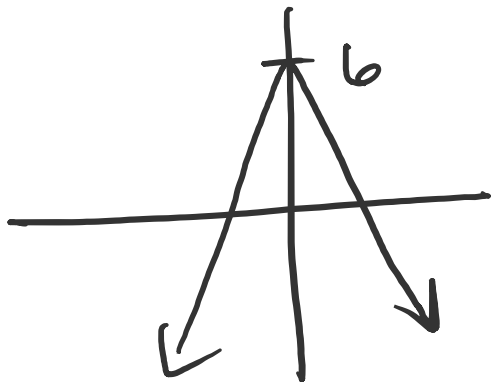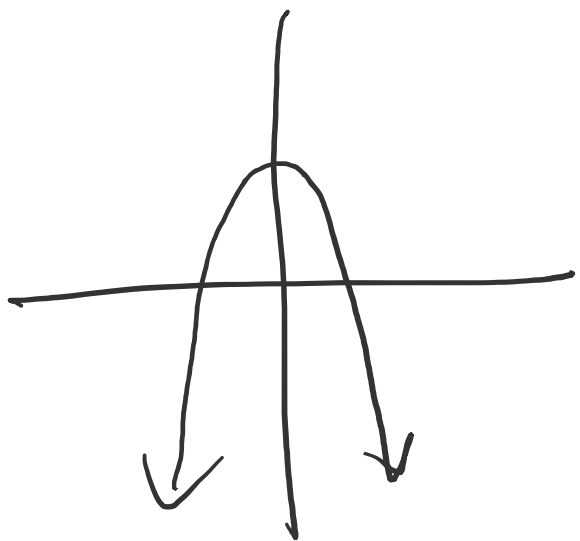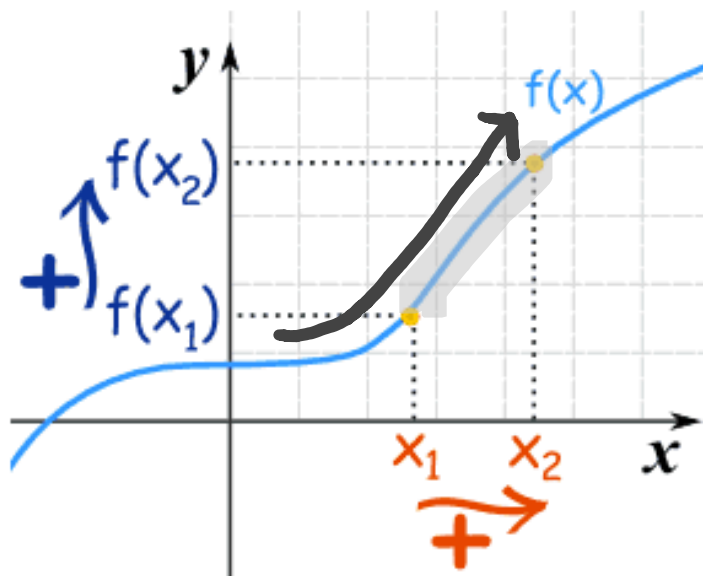
Range :

$\{ y | y \leq 4 \}$

$(-\infty, 4]$

FINISH PARENT FUNCTIONS

OBJECTIVE

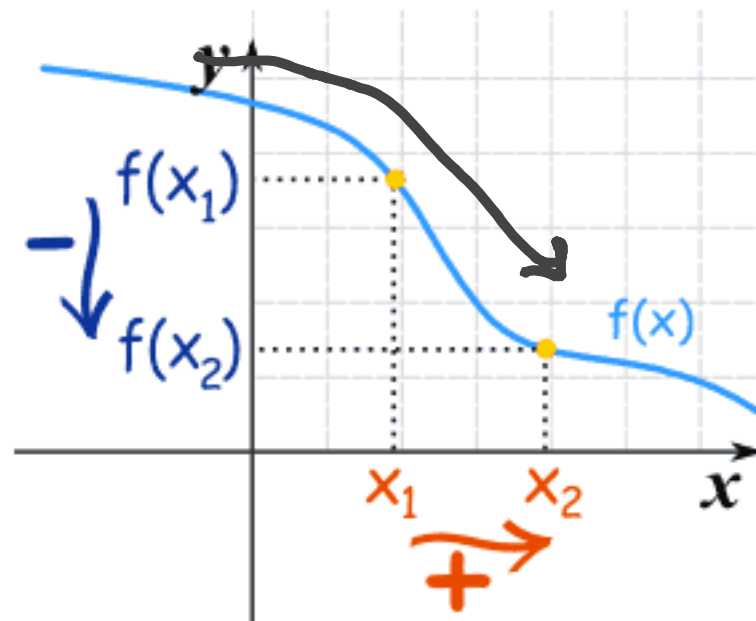Learn about Intervals of Increasing and Decreasing as well as Average Rate of Change

Increasing

A function is "increasing" when the **y-value** increases as the **x-value** increases, like this:

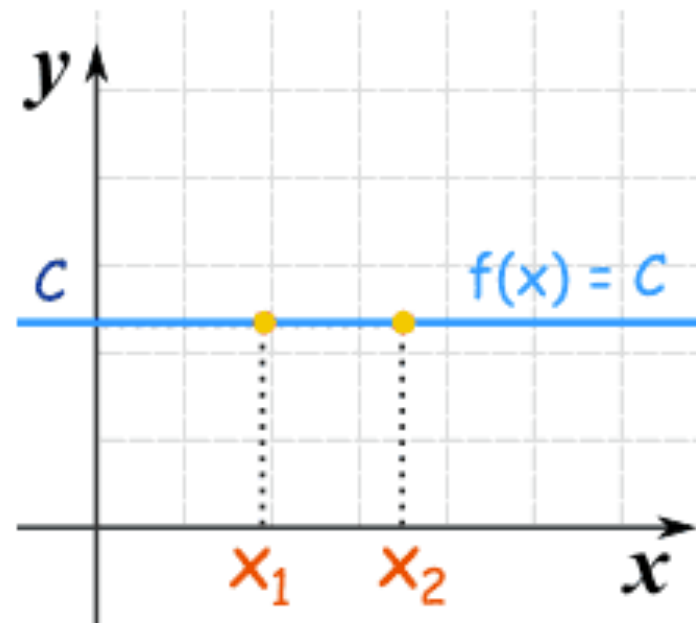It is easy to see that **y=f(x)** tends to go **up** as it goes **along**.

mathisfun.com

Decreasing

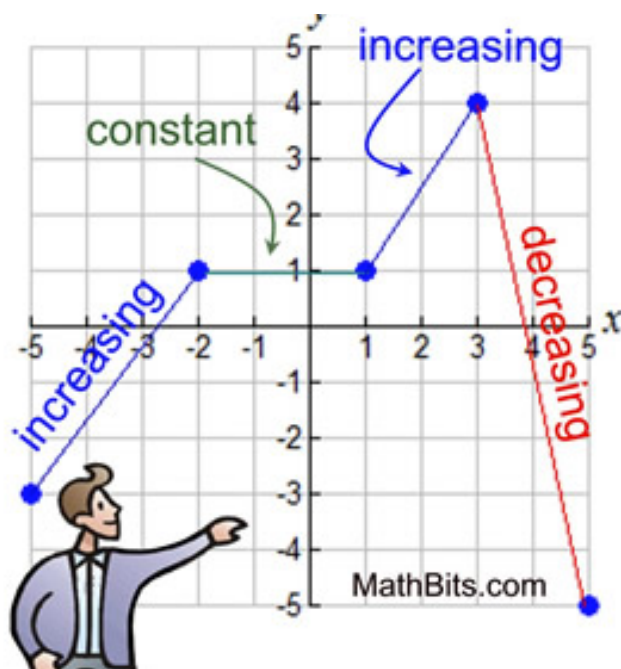The **y-value** decreases as the **x-value** increases:

mathisfun.com

Constant Functions

A Constant Function is a horizontal line:

mathisfun.com

Intervals of increasing, decreasing or constant **ALWAYS** pertain to *x*-values.
Do NOT read numbers off the *y*-axis.
Stay on the *x*-axis for these intervals!

HINT

The function is increasing on the *x*-intervals **(-5,-2)** and **(1,3)**.
The function is decreasing on the *x*-interval **(3,5)**.
The function is constant on the *x*-interval **(-2,1)**.

Key Features, cont

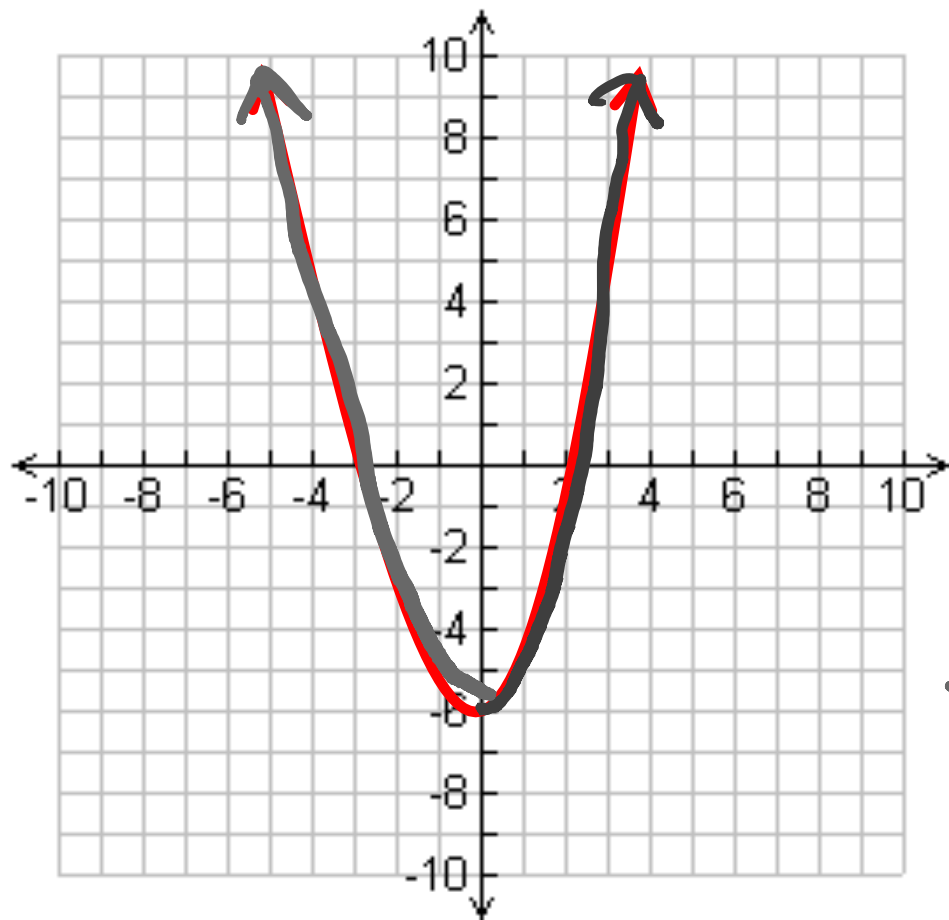**<u>Maximum-</u>** changes from increasing to decreasing (is described by the highest y value)

<u>Minimum-</u> changes from decreasing to increasing (described by the lowest y value)

<u>X-intercepts (zeros):</u> Where the graph crosses the x-axis

<u>Y-intercept:</u> Where the graph crosses the y-axis

Key features?

X-intercepts/zeros:

$-3, \ 2$

Y-intercept:

-6

Increasing/Decreasing Intervals

Use X values

INC: $(0, \infty)$

DEC: $(-\infty, 0)$

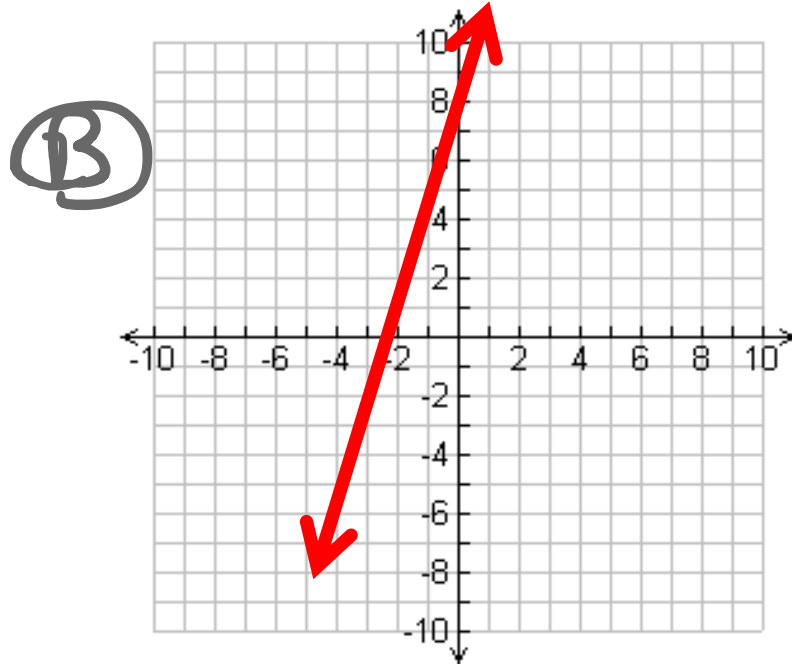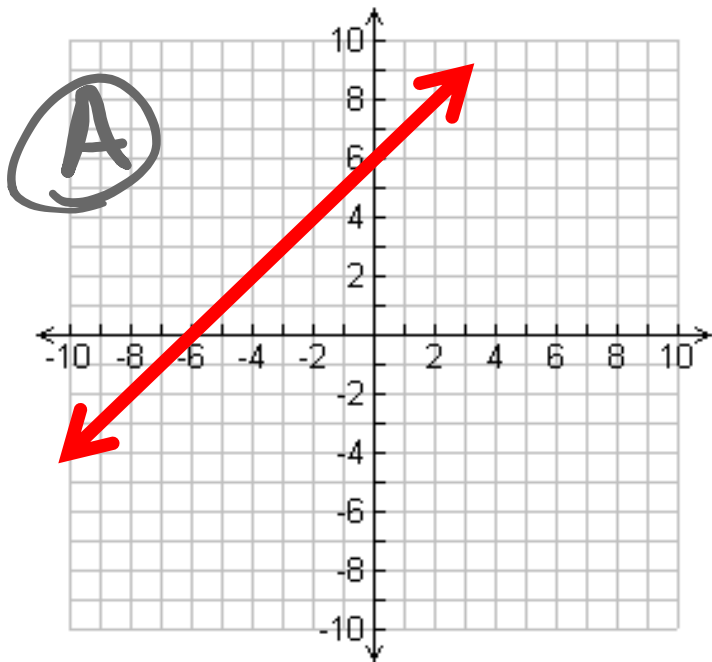Increasing/Decreasing?
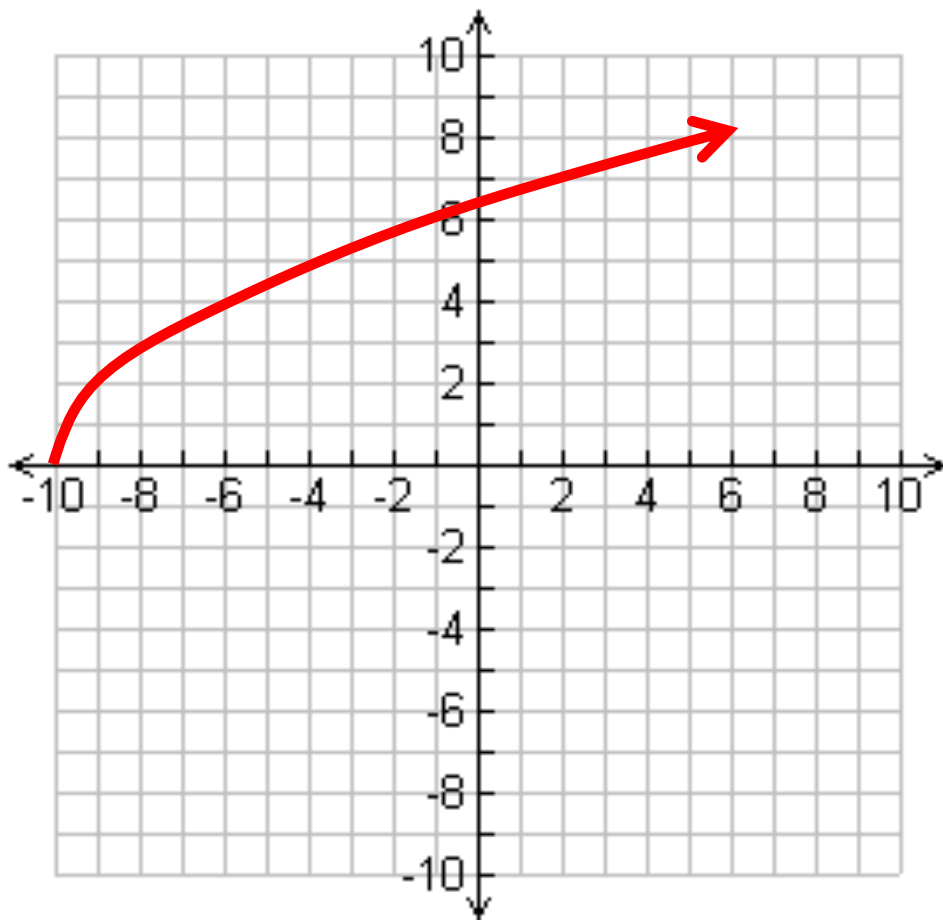
INC: $(-\infty, \infty)$ DEC: N/A

1) Which graph has a greater **x-intercept?**   B

2) Which graph has a greater **y-intercept?**   B

3) Which graph has a greater **slope?**   B

Key features?

Increasing/decreasing?

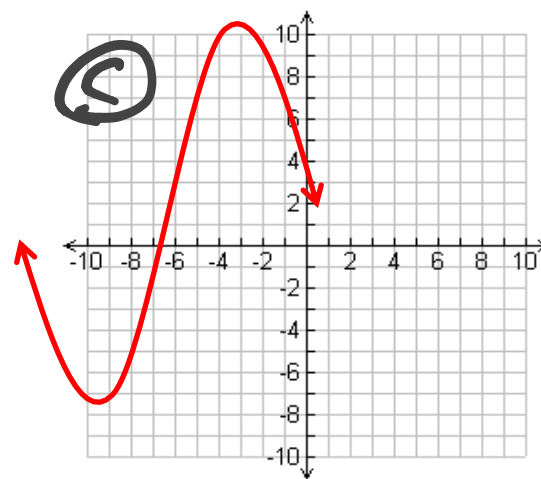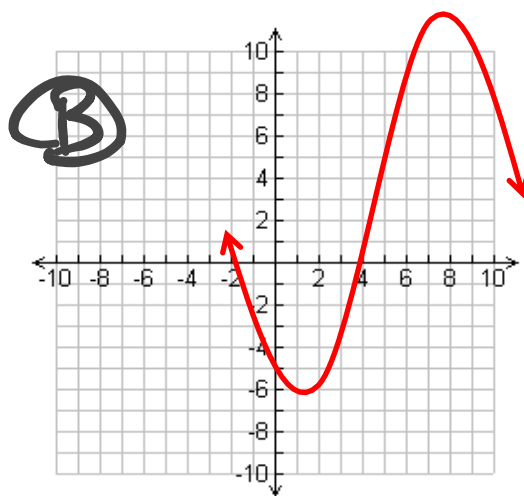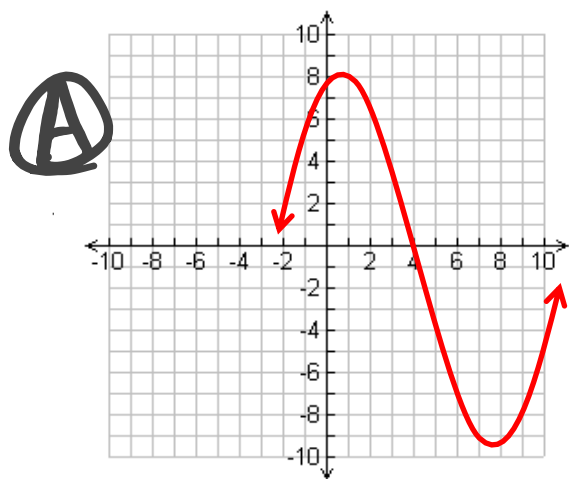$(-10, \infty)$ $\searrow$ x

X-intercept?

-10

Y-intercept?
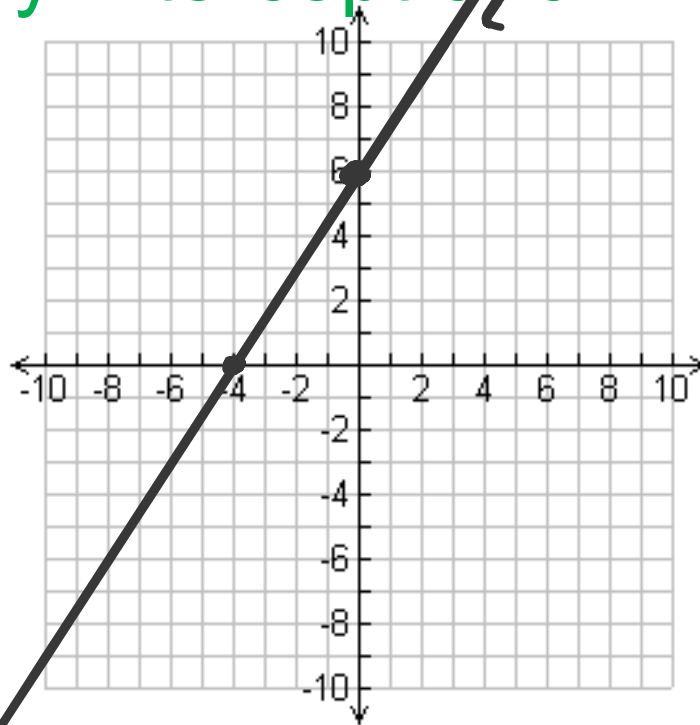
6:56

Choose the graph that is:

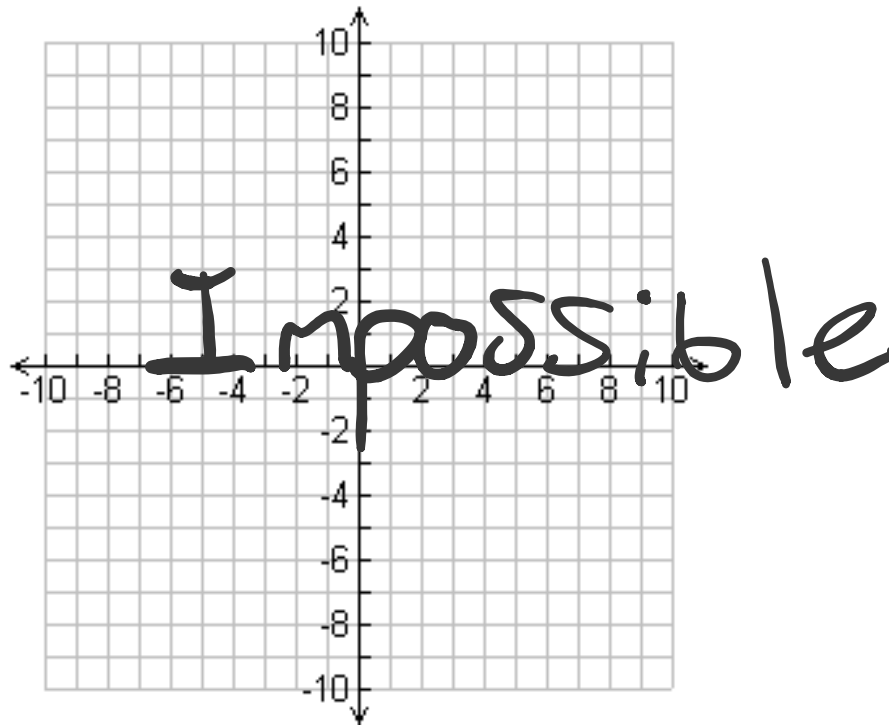- Decreasing, then increasing, then decreasing
- Has an x-intercept of 4

Which of these are possible?

A) A graph that is increasing only, which has an x-intercept of -4 and a y-intercept of 6.

B) A graph that is increasing, then decreasing, has x-intercepts of 5 and -5, and a y-intercept of -9.

C) A graph that is increasing, then decreasing, then increasing again, that has x-intercepts of -8, 2, and 7, and a y-intercept of 4.
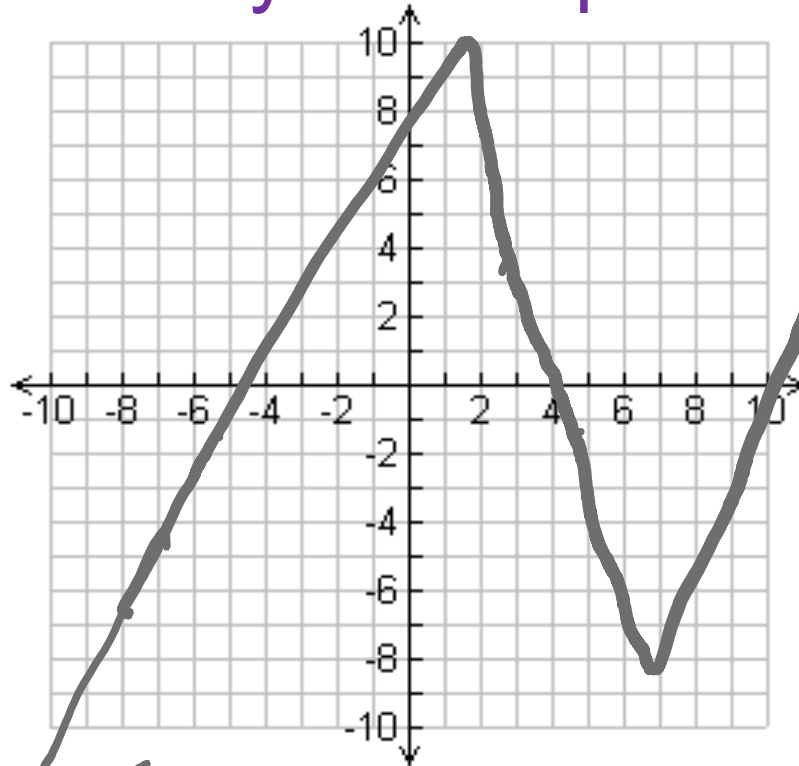
A) A graph that is increasing only, which has an x-intercept of -4 and a y-intercept of 6.

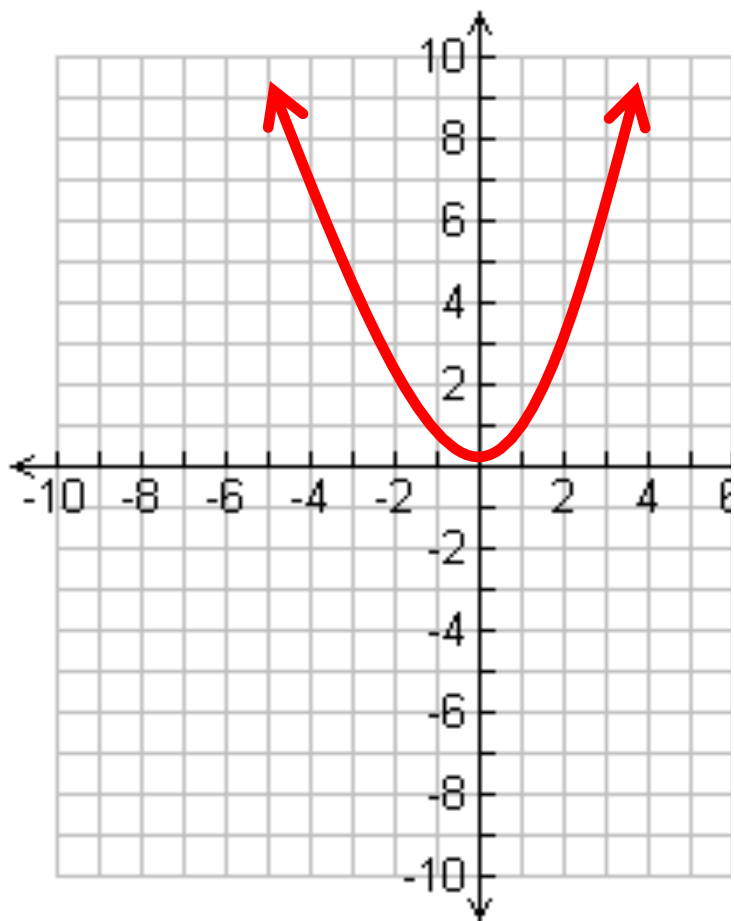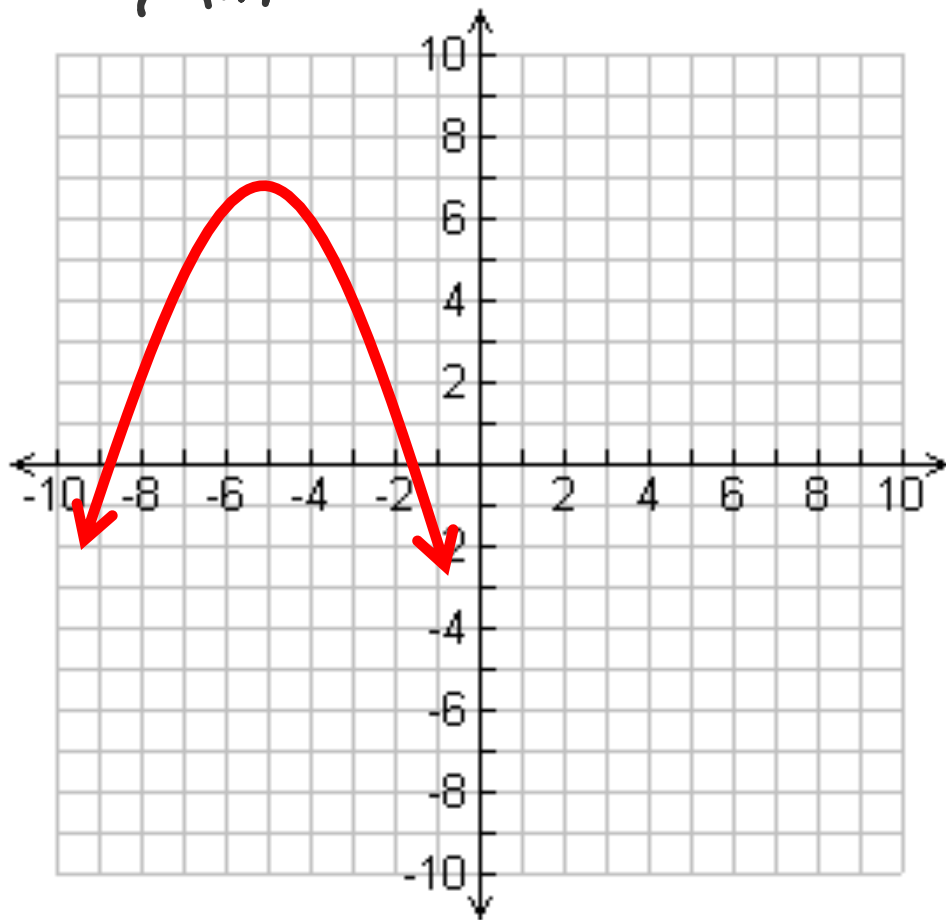B)   A graph that is increasing, then decreasing, has x-intercepts of 5 and -5, and a y-intercept of -9.

Impossible

C) A graph that is increasing, then decreasing, then increasing again, that has x-intercepts of -8, 2, and 7, and a y-intercept of 4.

Maximum or Minimum Point?

Min: 0

Max: 7

Homework

- Worksheet