

Date: \_\_\_\_\_

Section: \_\_\_\_\_

Objective: \_\_\_\_\_

### Intercepts

***x-Intercepts:*** The points where a graph crosses the \_\_\_\_\_. They have the form  $(x, 0)$ .

- To find the  $x$ -intercept(s), \_\_\_\_\_.

***y-Intercepts:*** The points where a graph crosses the \_\_\_\_\_. They have the form  $(0, y)$ .

- To find the  $y$ -intercept(s), \_\_\_\_\_.

**Examples:** Find the intercepts of each graph. Write the intercepts as ordered pairs.

a)  $f(x) = 2x + 6$

b)  $f(x) = -3x + 2$

***x-intercept*** \_\_\_\_\_

***x-intercept*** \_\_\_\_\_

***y-intercept*** \_\_\_\_\_

***y-intercept*** \_\_\_\_\_

c)  $3x + 2y = 12$

d)  $x - 2y = 5$

***x-intercept*** \_\_\_\_\_

***x-intercept*** \_\_\_\_\_

***y-intercept*** \_\_\_\_\_

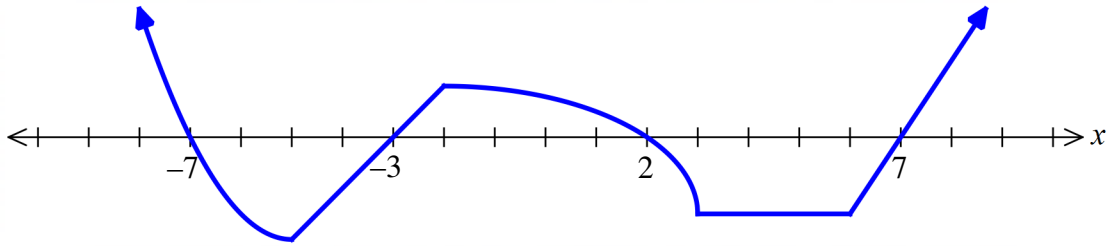
***y-intercept*** \_\_\_\_\_

## Positive and Negative

- A function is **positive** where the y-coordinates are positive. The graph is \_\_\_\_\_ *the x-axis*.
- A function is **negative** where the y-coordinates are negative. The graph is \_\_\_\_\_ *the x-axis*.
- ★ When you are asked to state where the graph is positive and negative, write the intervals of the of \_\_\_\_\_ - coordinates from \_\_\_\_\_ to \_\_\_\_\_.
- ★ Use \_\_\_\_\_ at the x-intercepts, where the graph crosses over from positive to negative. The y-coordinate is zero at the intercepts, so the graph is neither positive or negative there. That means those points are not included in the interval.
- ★ Use \_\_\_\_\_ if the graph has an **endpoint** somewhere above or below the x-axis.

**Example:** Color the increasing, decreasing, and constant sections of the graph each a different color. Then write the intervals where the graph is increasing, decreasing, and constant in interval notation.

a)



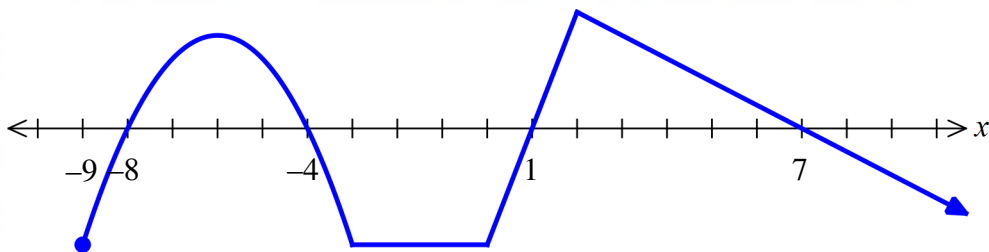
The positive section(s) are \_\_\_\_\_ color.

Positive interval(s): \_\_\_\_\_

The negative section(s) are \_\_\_\_\_ color.

Negative interval(s): \_\_\_\_\_

b)



The positive section(s) are \_\_\_\_\_ color.

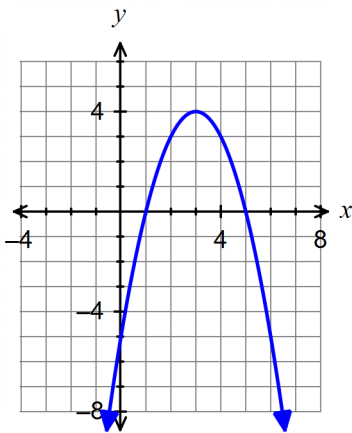
Positive interval(s): \_\_\_\_\_

The negative section(s) are \_\_\_\_\_ color.

Negative interval(s): \_\_\_\_\_

**Example:** Give the coordinates of the intercepts as ordered pairs. Then, color the parts of the graph where the function is positive and the parts where the function is negative in different colors. Write the intervals where the function is positive and negative in interval notation.

a)



x-intercept(s): \_\_\_\_\_

y-intercept: \_\_\_\_\_

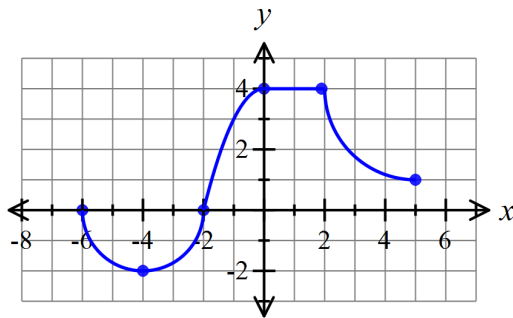
Positive color: \_\_\_\_\_

Positive interval(s): \_\_\_\_\_

Negative color: \_\_\_\_\_

Negative interval(s): \_\_\_\_\_

b)



x-intercept(s): \_\_\_\_\_

y-intercept: \_\_\_\_\_

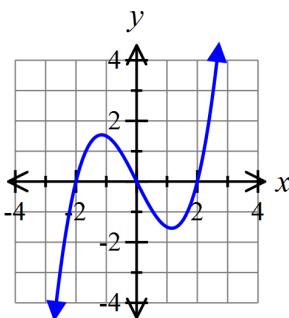
Positive color: \_\_\_\_\_

Positive interval(s): \_\_\_\_\_

Negative color: \_\_\_\_\_

Negative interval(s): \_\_\_\_\_

c)



x-intercept(s): \_\_\_\_\_

y-intercept: \_\_\_\_\_

Positive color: \_\_\_\_\_

Positive interval(s): \_\_\_\_\_

Negative color: \_\_\_\_\_

Negative interval(s): \_\_\_\_\_