

NAME:

DATE:

STUDY GUIDE KEY

A2.Q1.BERMELLEEMBO:

GRAPHING FUNCTIONS

(DAY G6)

EXAMINATION REVIEW PRACTICE

TRANSFORMATIONS OF PARENT FUNCTIONS

NO CALCULATORS

absolute value: "V" shape
1. NEW FUNCTION: $f(x) = 3|x-5| - 3$

Horizontal Translation: shift right 5

Reflection: NONE

Dilation: Vertical stretch ($\times 3$)

Slope Ratio: $\pm \frac{3}{1}$ rise/run

Vertical Translation: shift down 3

VERTEX: $(5, -3)$

Y-INT: $y = 12$ (off the page)

ZERO(S): $x = 4$ or $x = 6$

AXIS OF SYMMETRY: $x = 5$

On what interval of x is f increasing?

$x > 5$

On what interval of x is f decreasing?

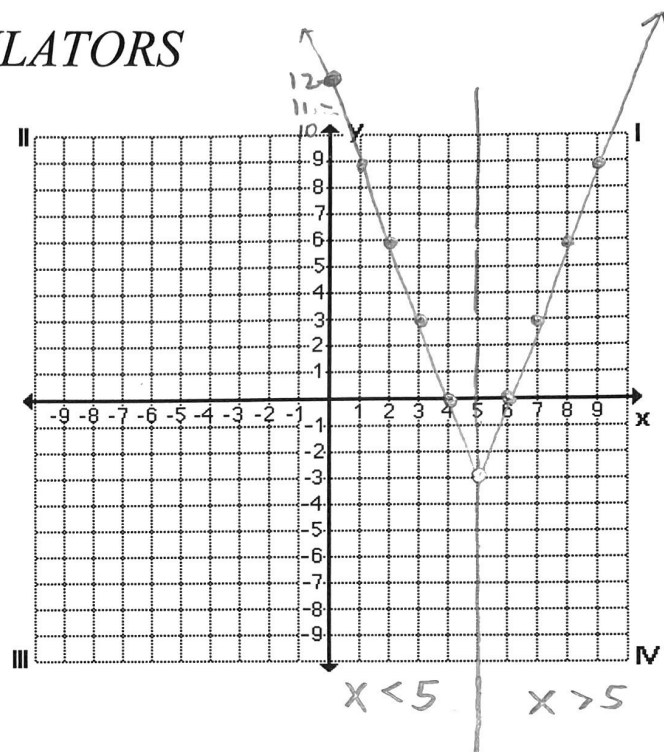
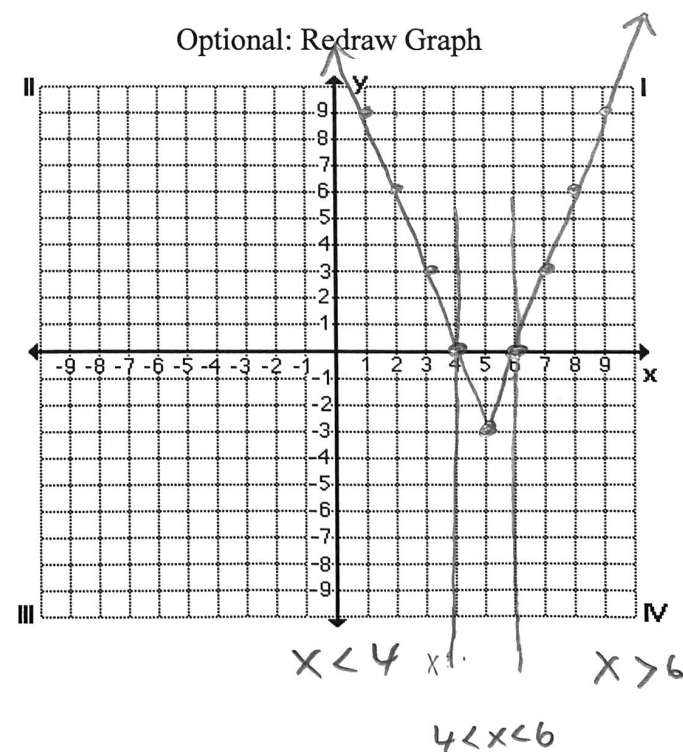
$x < 5$

On what interval of x is $f(x) > 0$?

$x < 4$ or $x > 6$

On what interval of x is $f(x) < 0$?

$4 < x < 6$



absolute value "v"

2. NEW FUNCTION: $f(x) = \frac{1}{2}|x+4|+3$

Horizontal Translation: shift left 4

Reflection: NONE

Dilation: vertical compression ($\times \frac{1}{2}$)

Slope Ratio: $\pm \frac{1}{2}$

Vertical Translation: shift up 3

VERTEX: $(-4, 3)$

Y-INT: $y = 5$

ZERO(S): NONE

AXIS OF SYMMETRY: $x = -4$

On what interval of x is f increasing?

$x > -4$

On what interval of x is f decreasing?

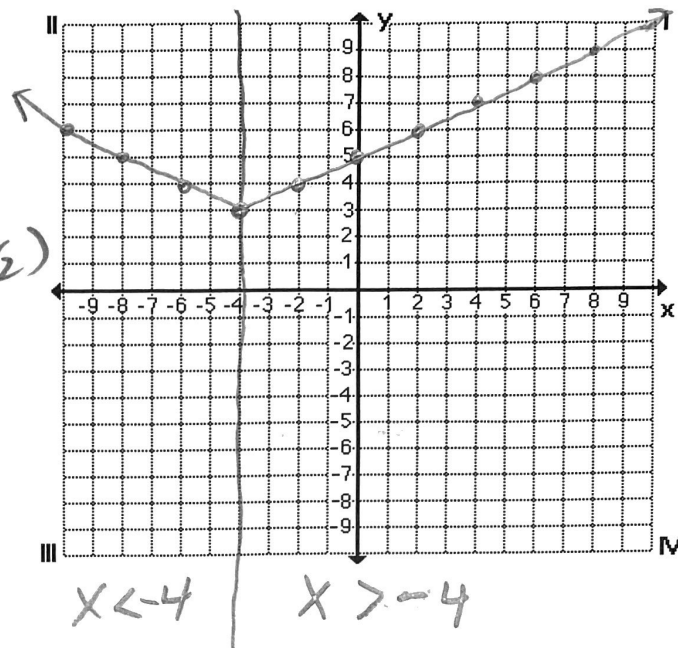
$x < -4$

On what interval of x is $f(x) > 0$?

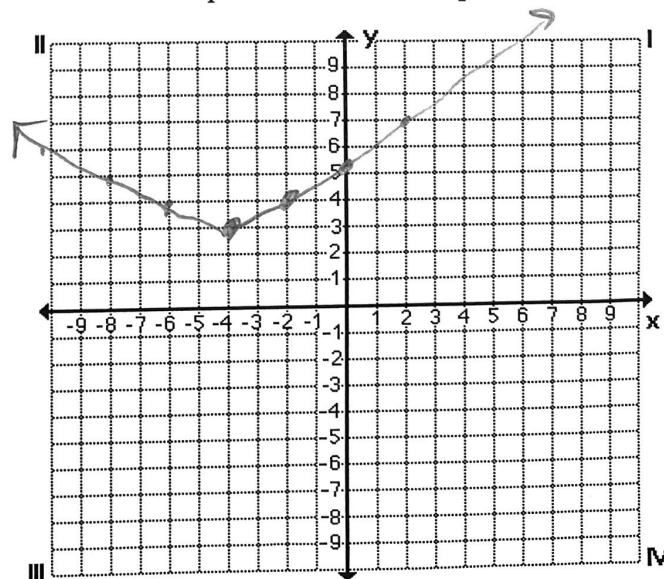
ALWAYS (all x)

On what interval of x is $f(x) < 0$?

NEVER



Optional: Redraw Graph



Quadratic "U" shape

3. NEW FUNCTION: $f(x) = (x+1)^2 - 4$

Horizontal Translation: shift left 1

Reflection: NONE

Dilation: NONE

Vertical Translation: shift down 4

VERTEX: $(-1, -4)$

Y-INT: $y = -3$

ZERO(S): $x = -3$ or $x = 1$

AXIS OF SYMMETRY: $x = -1$

On what interval of x is f increasing?

$$x > -1$$

On what interval of x is f decreasing?

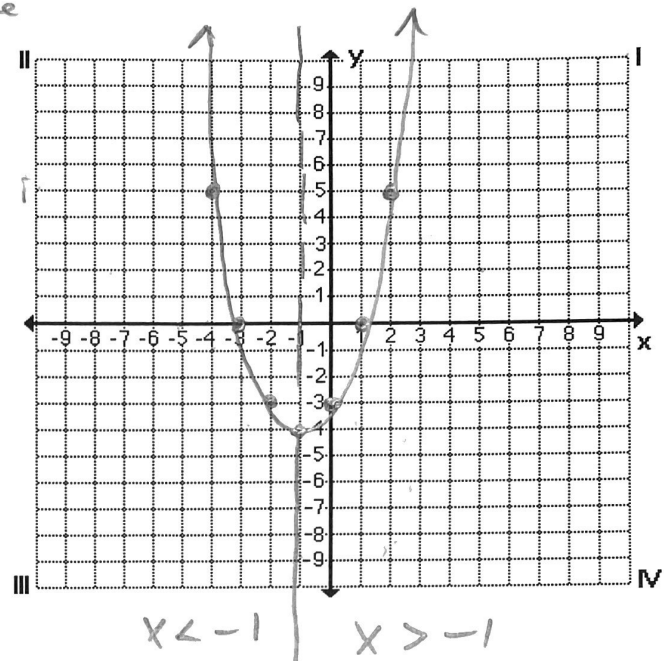
$$x < -1$$

On what interval of x is $f(x) > 0$?

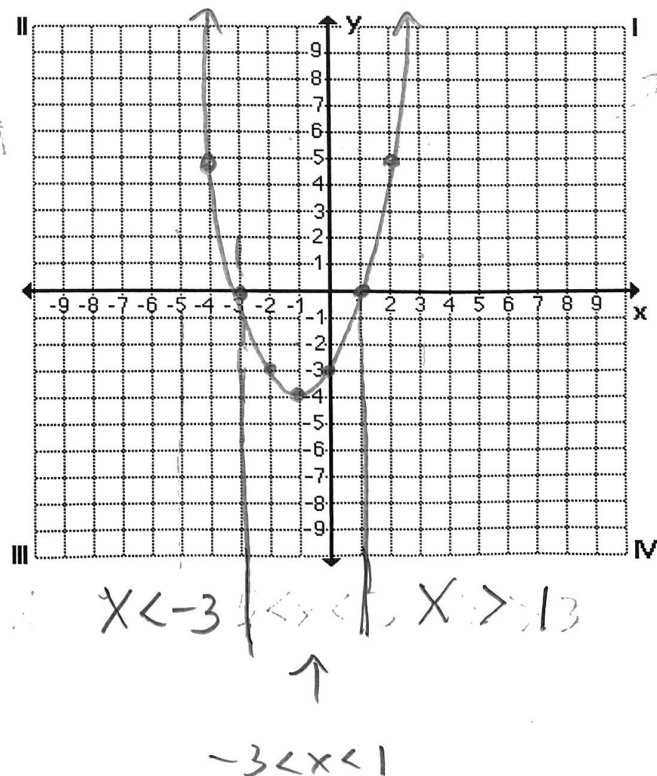
$$x < -3 \text{ or } x > 1$$

On what interval of x is $f(x) < 0$?

$$-3 < x < 1$$



Optional: Redraw Graph



Quadratic "U" shape

4. NEW FUNCTION: $f(x) = -(x-3)^2 + 1$

Horizontal Translation: shift right 3

Reflection: YES

Dilation: NONE

Vertical Translation: shift up 1

VERTEX: $(3, 1)$

Y-INT: $y = -8$

ZERO(S): $x = 2$ or $x = 4$

AXIS OF SYMMETRY: $x = 3$

On what interval of x is f increasing?

$$x < 3$$

On what interval of x is f decreasing?

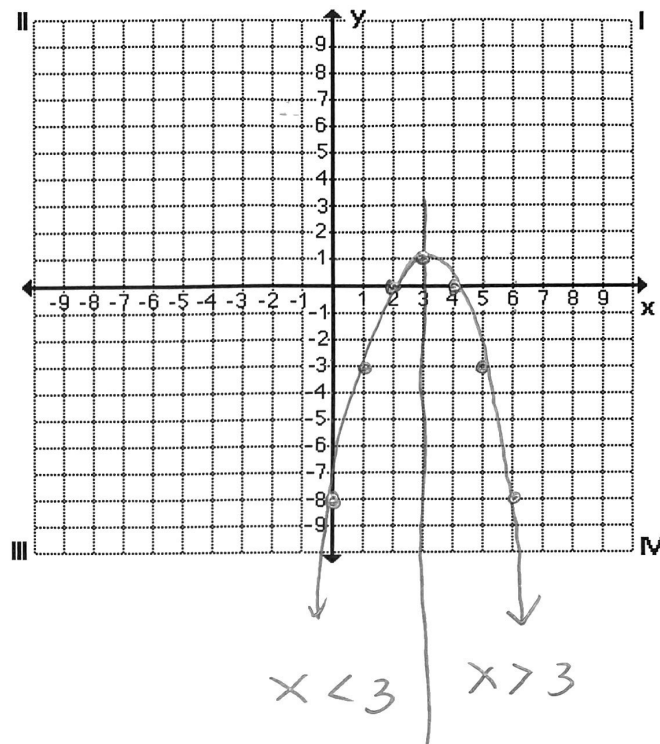
$$x > 3$$

On what interval of x is $f(x) > 0$?

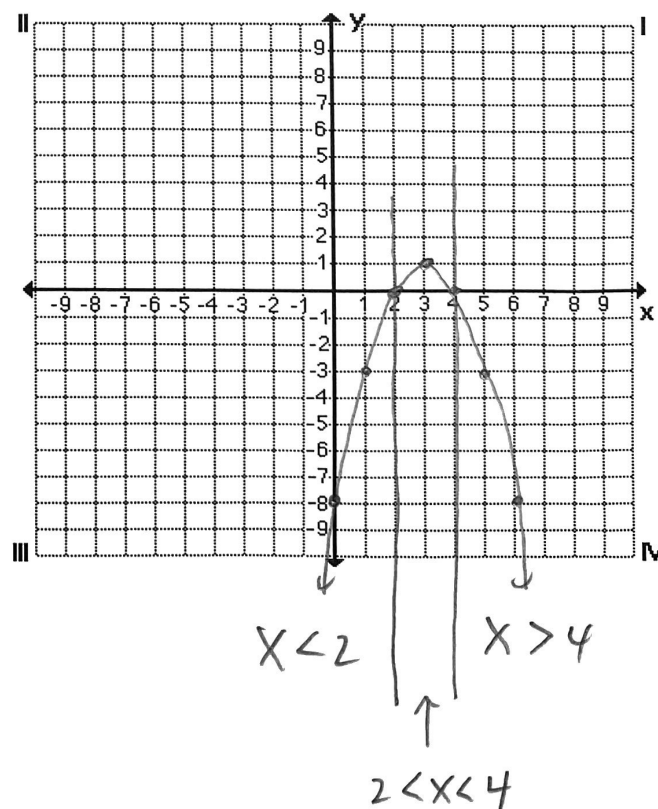
$$2 < x < 4$$

On what interval of x is $f(x) < 0$?

$$x < 2 \text{ or } x > 4$$



Optional: Redraw Graph



5. NEW FUNCTION: $f(x) = \frac{2}{5}x + 4$

SLOPE: $m = \frac{2}{5}$ $\frac{\text{rise}}{\text{run}}$

Y-INT: $y = 4$

ZERO(S): $x = -10$

On what interval of x is f increasing?

ALWAYS

On what interval of x is f decreasing?

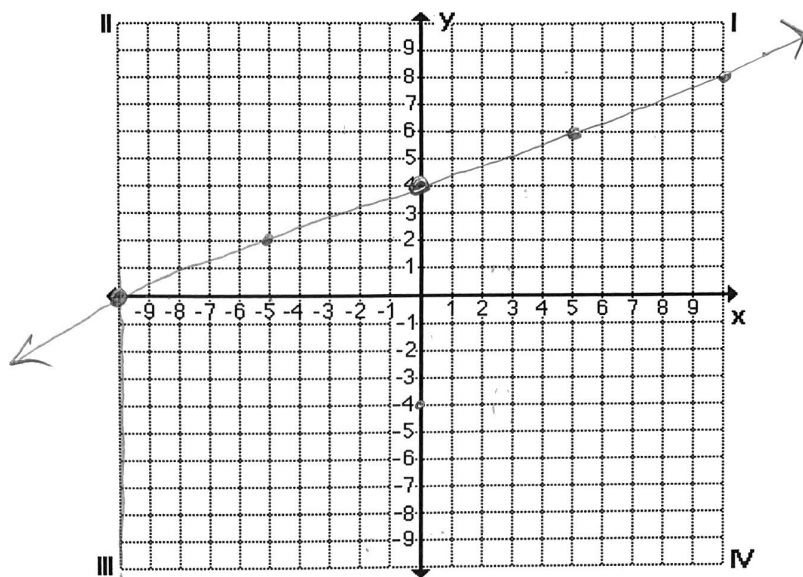
NEVER

On what interval of x is $f(x) > 0$?

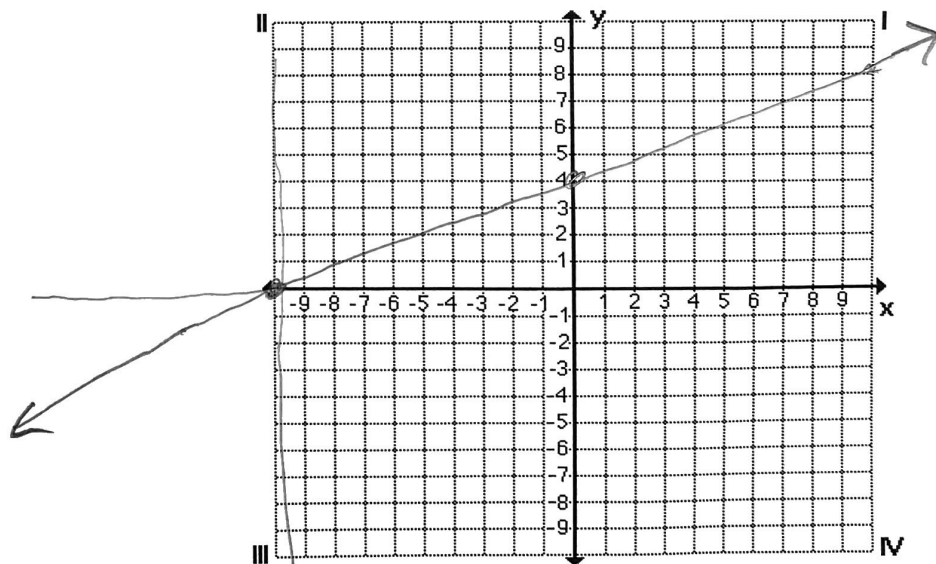
$x > -10$

On what interval of x is $f(x) < 0$?

$x < -10$



Optional: Redraw Graph



$x < -10$

$x > -10$

6. NEW FUNCTION: $f(x) = -3x + 6$

SLOPE: $m = -\frac{3}{1}$

Y-INT: $y = 6$

ZERO(S): $x = 2$

On what interval of x is f increasing?

never

On what interval of x is f decreasing?

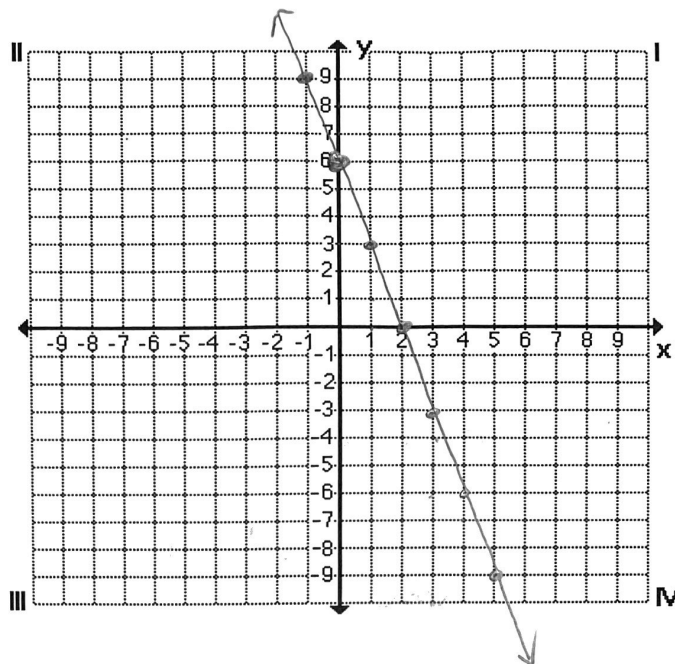
always (all x)

On what interval of x is $f(x) > 0$?

$x < 2$

On what interval of x is $f(x) < 0$?

$x > 2$



Optional: Redraw Graph

