College Algebra

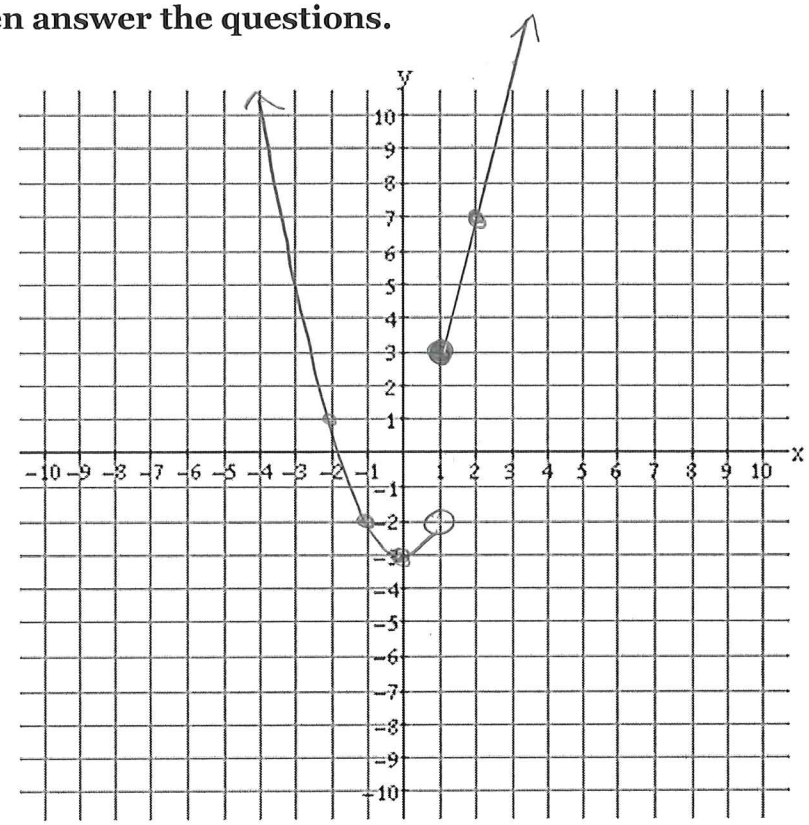
Name Key

Unit 1 LT 2 Practice Day 2

Date: _____ Period: _____

Graph each piecewise function and then answer the questions.

1.) $f(x) = \begin{cases} x^2 - 3 & x < 1 \\ 4x - 1 & x \geq 1 \end{cases}$



f(1) = 3

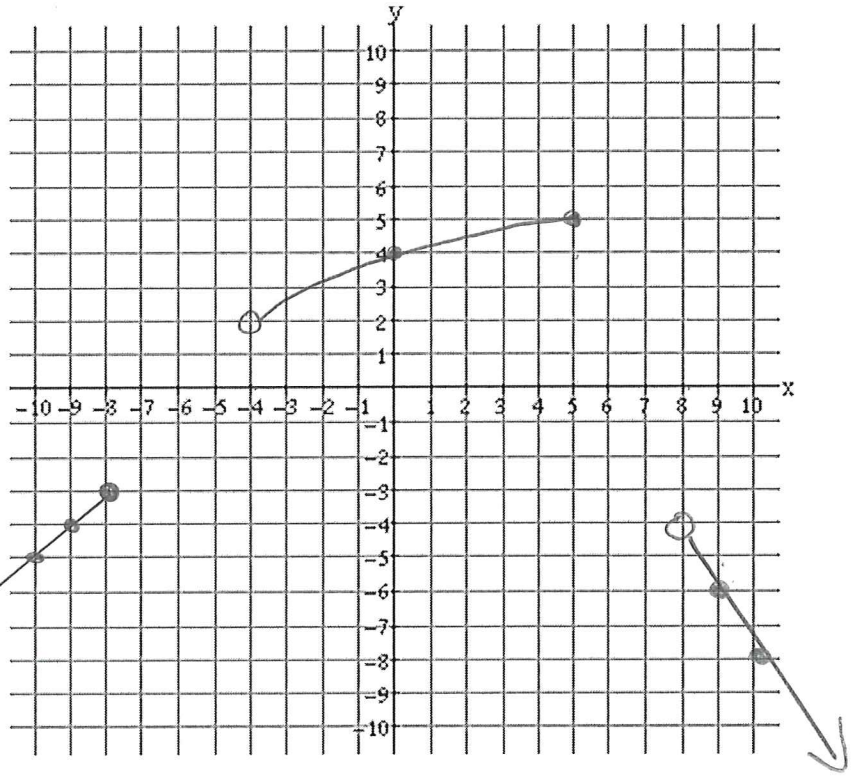
f(-2) = 1

f(4) = 15

Domain: $(-\infty, \infty)$

Range: $[-3, \infty)$

2.) $f(x) = \begin{cases} x + 5 & x \leq -8 \\ \sqrt{x+4} + 2 & -4 < x \leq 5 \\ -2|x - 6| & x > 8 \end{cases}$



f(-9) = -4

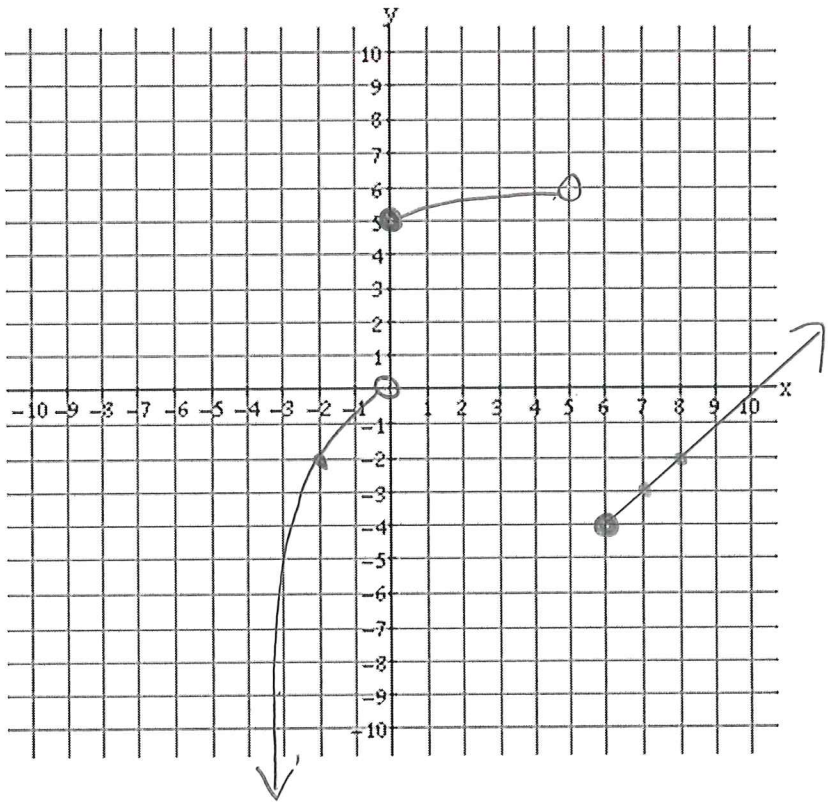
f(0) = 4

f(9) = -6

Domain: $(-\infty, -8] \cup (-4, 5] \cup (8, \infty)$

Range: $(-\infty, -3] \cup [2, 5]$

3.) $f(x) = \begin{cases} \frac{1}{4}x^3 & x < 0 \\ \sqrt{x+4}+3 & 0 \le x < 5 \\ x - 10 & x \ge 6 \end{cases}$



f(0) = 5

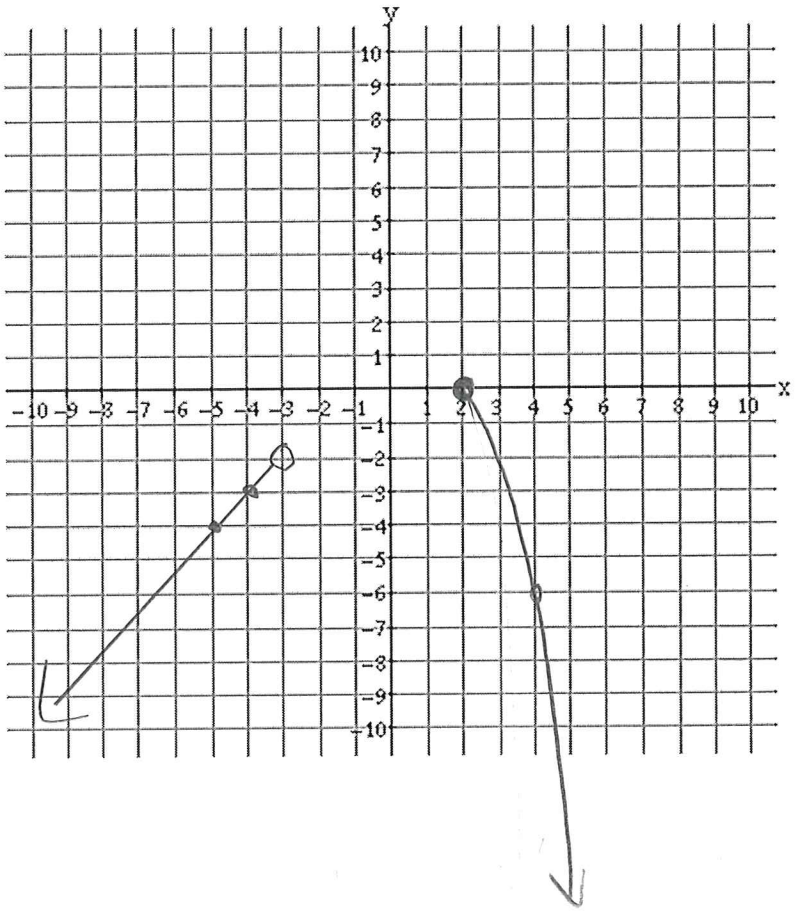
f(7) = -3

f(-2) = -2

Domain: $(-\infty, 5) \cup [6, \infty)$

Range: $(-\infty, \infty)$

4.) $f(x) = \begin{cases} 2x + 4 & x < -3 \\ -\frac{1}{2}x^2 + 2 & x \ge 2 \end{cases}$



f(-5) = -6

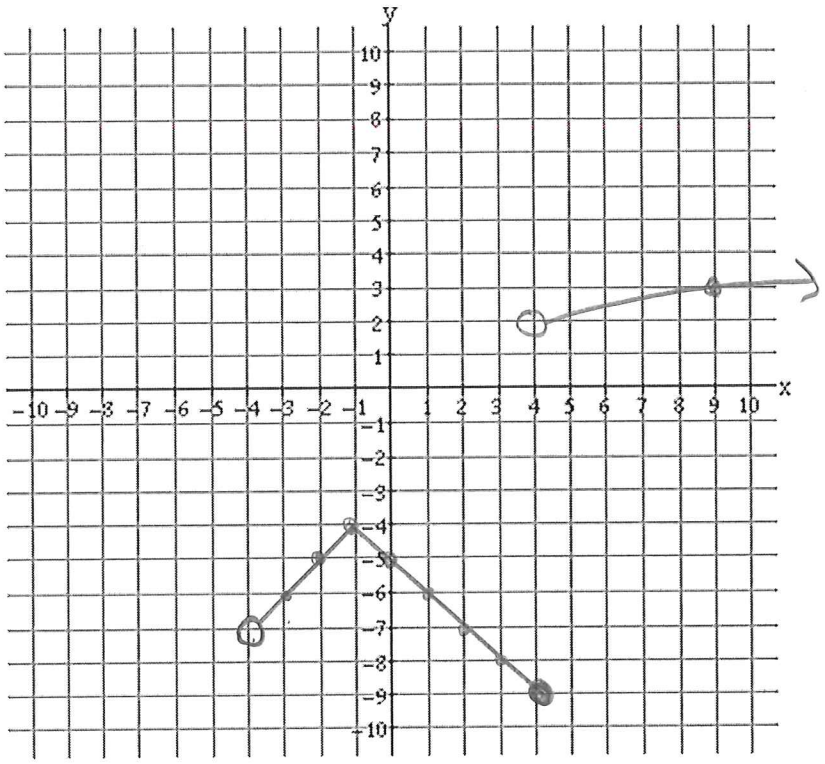
f(4) = -6

f(0) = ∅

Domain: $(-\infty, -3) \cup [2, \infty)$

Range: $(-\infty, 0]$

5.) $f(x) = \begin{cases} -|x+1|-4 & -4 < x \le 4 \\ \sqrt{x} & x > 4 \end{cases}$



f(4) = -9

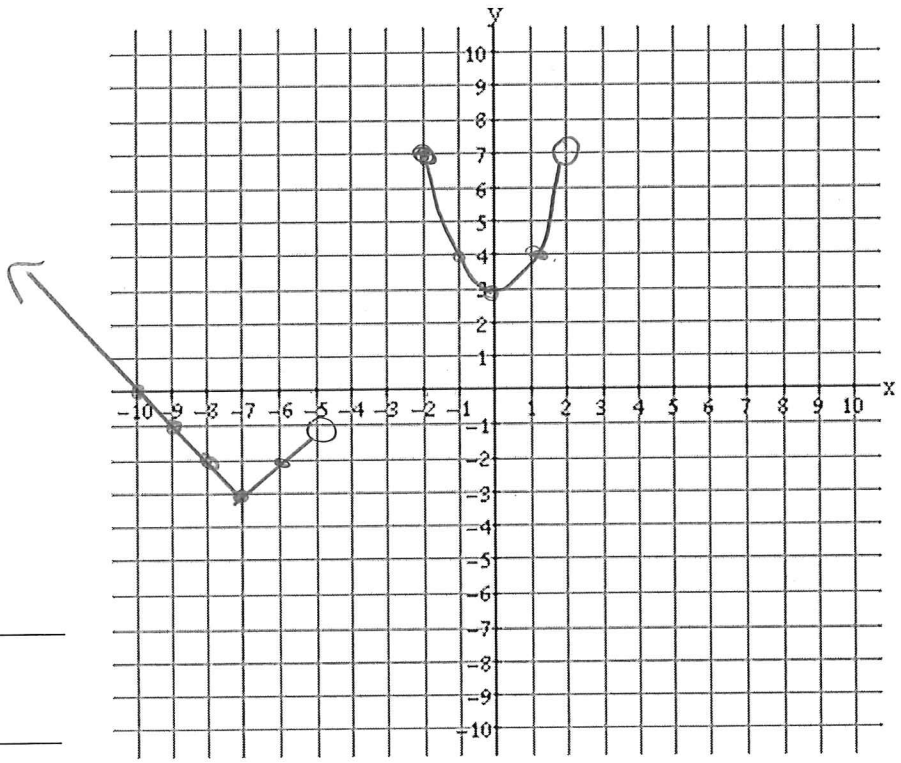
f(-4) = $\varnothing$

f(9) = 3

Domain: $(-4, \infty)$

Range: $[-9, -4] \cup (2, \infty)$

6.) $f(x) = \begin{cases} |x+7|-3 & x < -5 \\ x^2+3 & -2 \le x < 2 \end{cases}$



f(2) = $\varnothing$

f(-7) = -3

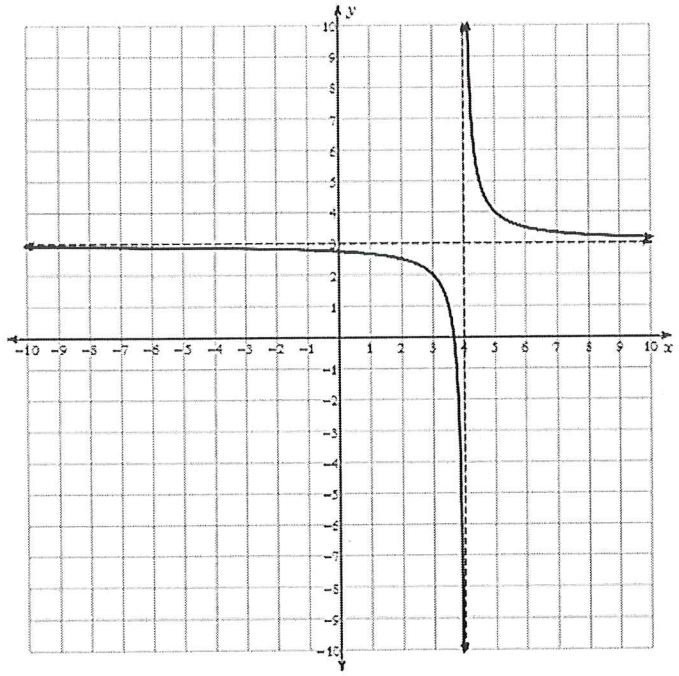
f(1) = 4

Domain: $(-\infty, -5) \cup [-2, 2)$

Range: $[-3, \infty)$

State in interval notation when each function is increasing or decreasing.

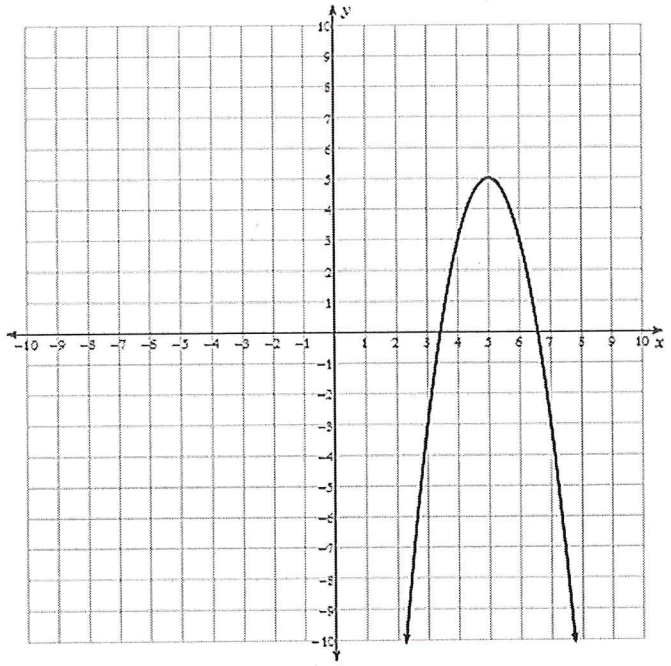
7.)



Increasing Interval: none

Decreasing Interval: $(-\infty, 4) \cup (4, \infty)$

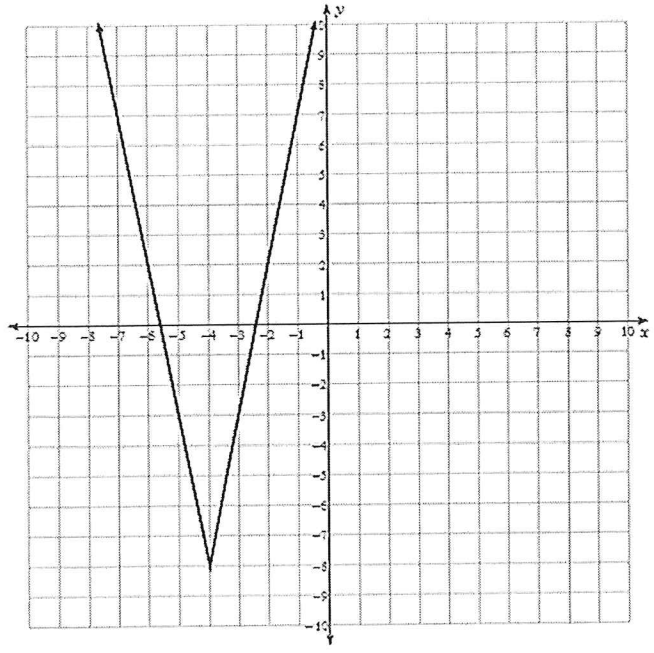
8.)



Increasing Interval: $(-\infty, 5)$

Decreasing Interval: $(5, \infty)$

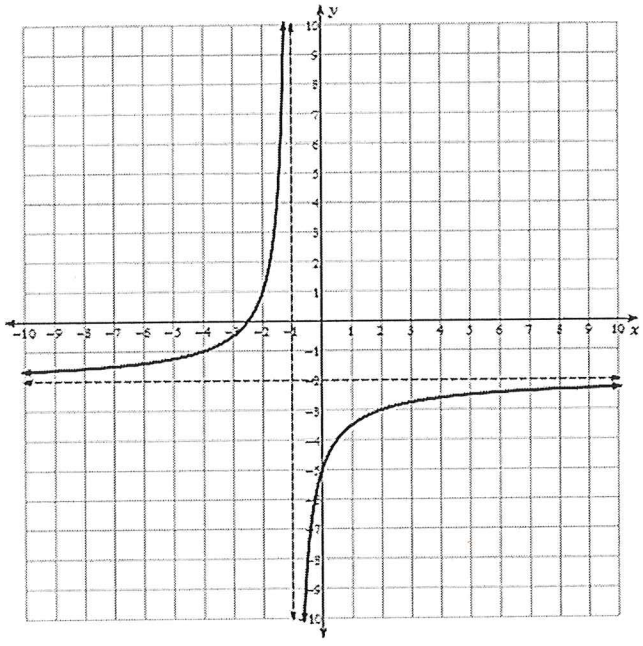
9.)



Increasing Interval: $(-4, \infty)$

Decreasing Interval: $(-\infty, -4)$

10.)



Increasing Interval: $(-\infty, -1) \cup (-1, \infty)$

Decreasing Interval: none