

Name _____

Date _____

Advanced Algebra
Unit 6: Advanced Systems of Equations
Assignment #5

Graph the following problems, identify the corner points, and shade in the feasible region.

$$\begin{cases} y \geq 0 \\ x \geq 0 \\ 8y + 7x \leq 56 \end{cases}$$

$$\begin{cases} y \leq 5 \\ x \leq 7 \\ y \geq x \end{cases}$$

$$\begin{cases} x + y \leq 9 \\ y \leq 4 \\ y \geq 1 \\ y - x \leq 4 \end{cases}$$

$$\begin{cases} y \leq x \\ y + 2x \leq 10 \\ y \geq 0 \end{cases}$$

Finding where the line intersects the curve.

For the following problems, do the following:

- Make a graph of both functions on paper, guess your intersections
- Use algebra to solve where $f(x)=g(x)$. This is setting a quadratic equal to a linear. So after you do this, get everything to 1 side and use the quadratic formula.
- Check your work by using the intersect feature on your calculator.

$$1) \begin{cases} f(x) = -x^2 + 6x - 5 \\ g(x) = -x + 5 \end{cases}$$

$$2) \begin{cases} f(x) = -x^2 + 5 \\ g(x) = -x + 1 \end{cases}$$

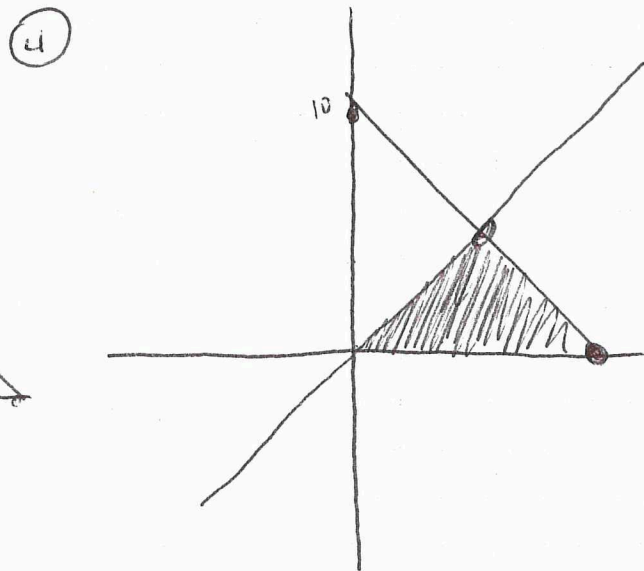
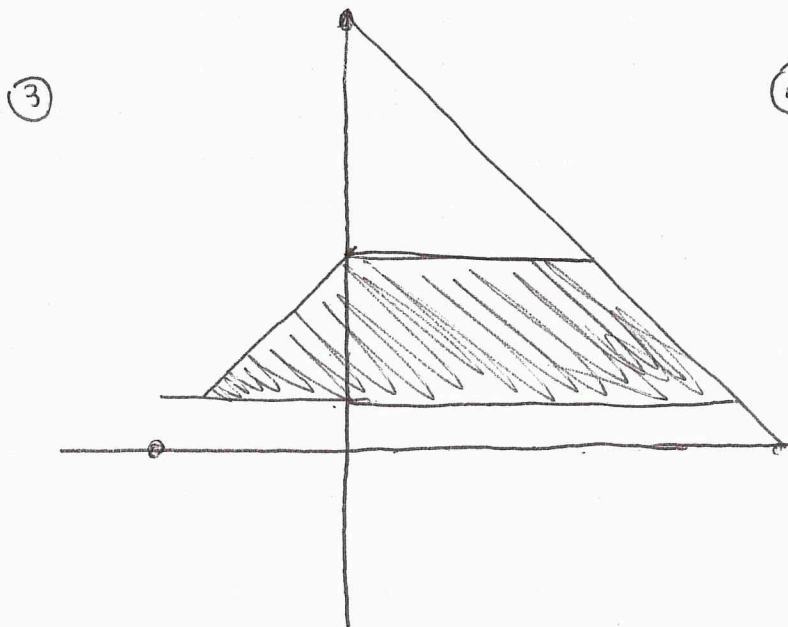
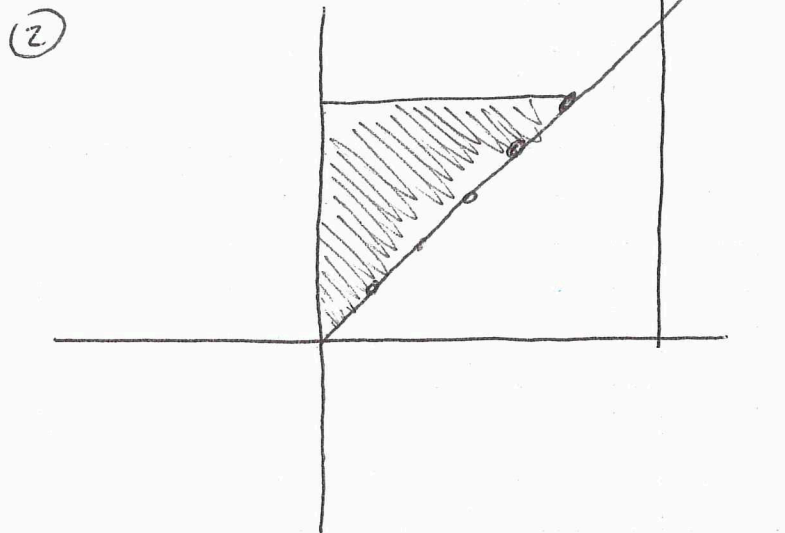
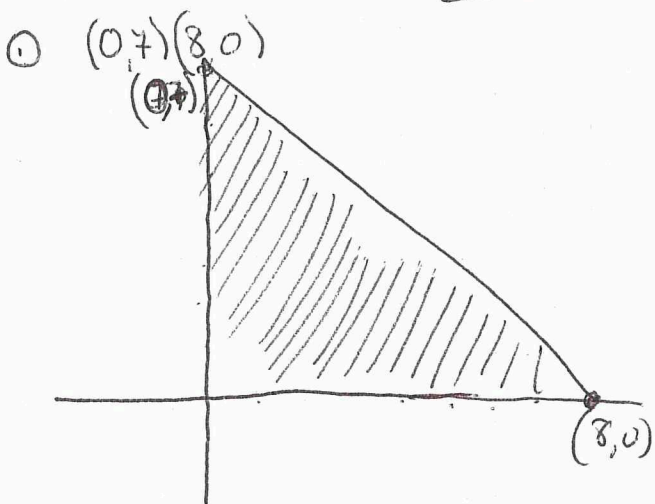
$$3) \begin{cases} f(x) = x^2 + 4x + 2 \\ g(x) = \frac{-1}{2}x + 2 \end{cases}$$

$$4) \begin{cases} f(x) = x^2 - 12x + 36 \\ g(x) = \frac{-1}{3}x + 6 \end{cases}$$

$$5) \begin{cases} f(x) = -x^2 + 8x - 10 \\ g(x) = -x + 8 \end{cases}$$

$$6) \begin{cases} f(x) = x^2 - 8x + 12 \\ g(x) = 3x - 4 \end{cases}$$

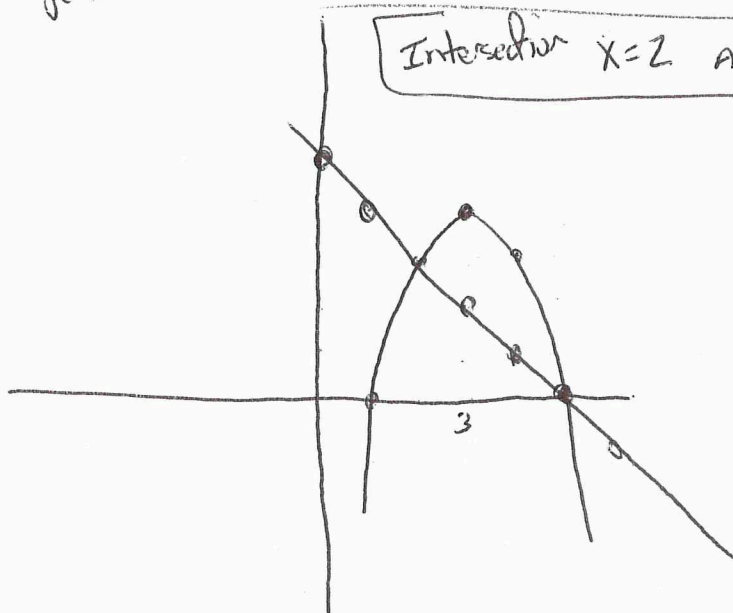
Unit 6 Assignment #1



① $f(x) = -x^2 + 6x + 5$
 $g(x) = -x + 5$

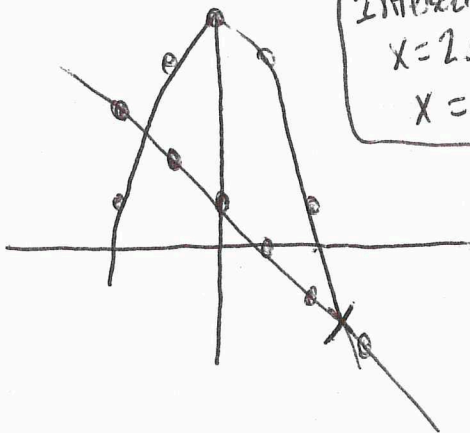
$-\frac{b}{2a} = (3, 4)$ vertex

Intersection $x=2$ and $x=5$



Unit 6 Assignment #1

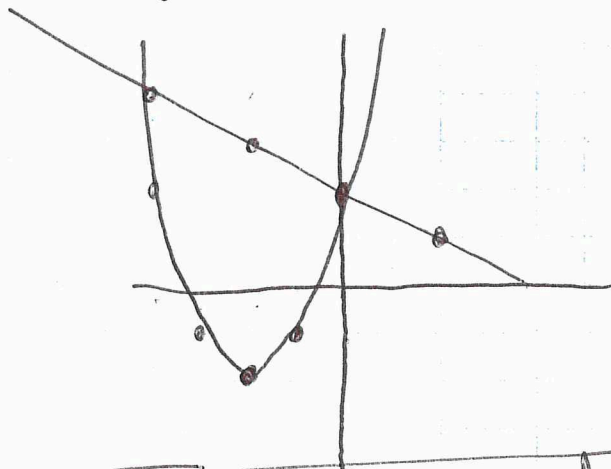
② $f(x) = -x^2 + 5$
 $g(x) = -x + 1$



Intersection
 $x = 2.5$
 $x = -1.5$

③ $f(x) = x^2 + 4x + 2$
 $g(x) = \frac{1}{2}x + 2$

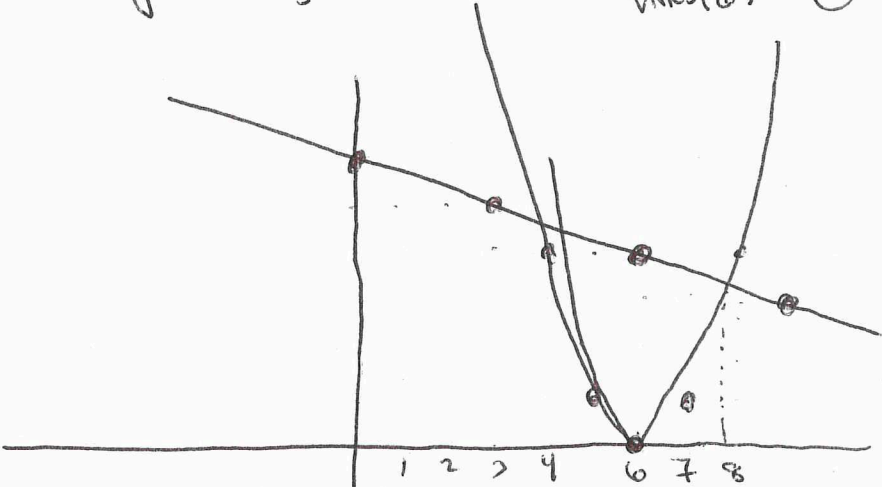
$-\frac{4}{2} = -2$
 VARS(-2), -2



Intersection $x = 0$ and -4

④ $f(x) = x^2 - 12x + 36$
 $g(x) = -\frac{1}{3}x + 6$

$\frac{12}{2} = 6$
 VARS(6) = 0



Intersection 7.8
 And 3.8

Unit 6 Assignment #1