

April 20th

Due Today: 11.5 HW

Due Next: 11.6

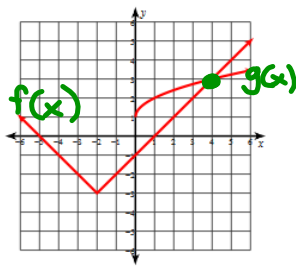
Unit 11: Function Operations

Lesson 11.6: Solving Systems of Functions Algebraically

Check
your HW
Answers:

1) $f(x) = |x+2| - 3$

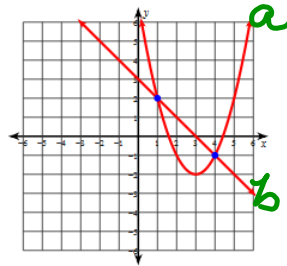
$g(x) = \sqrt{x} + 1$



2) Clearly state the solutions to the previous problem as coordinates:
 $(4, 3)$

3) $a(x) = (x-3)^2 - 2$

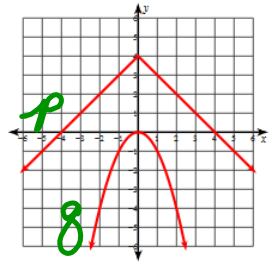
$b(x) = -x + 3$



4) Clearly state the solutions to the previous problem as coordinates:
 $(1, 2), (4, -1)$

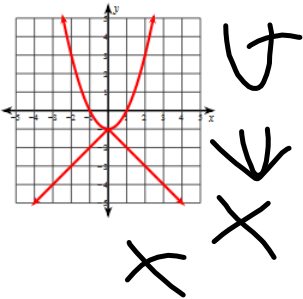
5) $p(x) = -|x| + 4$

$q(x) = -x^2$

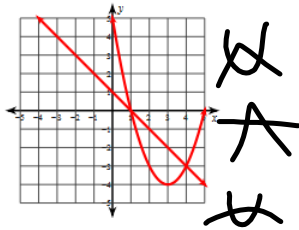


6) Clearly state the solutions to the previous problem as coordinates:
no solutions.

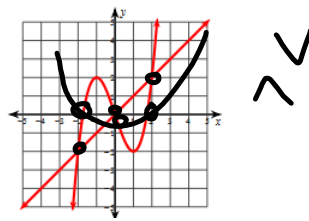
7) Draw a system of two equations on the grid below that has only ONE solution:



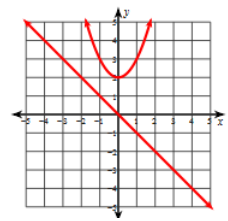
8) Draw a system of two equations on the grid below that has TWO solutions:



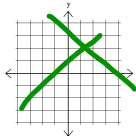

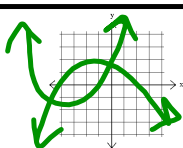
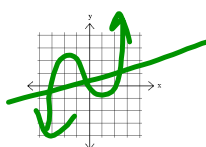
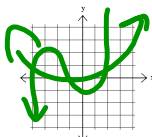
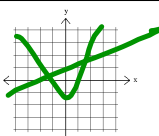
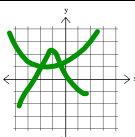
9) Draw a system of two equations on the grid below that has THREE solutions:



10) Draw a system of two equations on the grid below that has NO solutions:



Types of Systems

<u>Combo</u>	<u>Graphically</u>	<u>Algebraically</u>
Linear-Linear		Sub. elimination.
Linear- Quad		Sub+ factoring
Quad- Quad		Sub- factoring
Linear- Cubic		
Quad- Cubic		
Linear- Abs Val		abs. solving
Quad- Abs Value		

AND THE LIST GOES ON...

Solving Quadratic - Linear Systems ALGEBRAICALLY

STEPS:

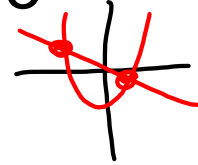
1. SOLVE BOTH EQUATIONS FOR Y.

$$y = x^2 + 4x - 1$$

$$y = x - 3$$

$$f(x) = x^2 + 4x - 1$$

$$g(x) = x - 3$$



2. SET BOTH EQUATIONS EQUAL TO EACH OTHER.

$$x^2 + 4x - 1 = x - 3$$

$$\begin{array}{r} -x + 3 \\ \hline \end{array}$$

3. MANIPULATE THE EQUATION SO THAT ONE SIDE EQUALS ZERO.

Standard form.

$$x^2 - 3x + 2 = 0$$

4. FACTOR THE REMAINING SIDE AND SOLVE.

$$(x - 2)(x - 1) = 0$$

$$x - 2 = 0, x - 1 = 0$$

$$x = 2, 1$$

5. PLUG THE X VALUES BACK INTO EITHER EQUATION (THE LINEAR WILL BE EASIER) TO SOLVE FOR THE Y VALUES

$$y = x - 3$$

$$= 2 - 3 \quad | \quad = 1 - 3$$

$$= -1 \quad | \quad = -2$$

7. WRITE OUT THE SOLUTIONS NEATLY!

$$\boxed{\begin{array}{l} x = 2, y = -1 \\ \text{and} \\ x = 1, y = -2 \end{array}}$$

Quadratic-System

$$2x^2 - 2 = y - 3x$$

$$2x^2 + 3x - 2 = y$$

$$y = 2x^2 + 3x - 2$$

$$y - 4 = -x^2$$

$$y = -x^2 + 4$$

$$2x^2 + 3x - 2 = -x^2 + 4$$

$$3x^2 + 3x - 6 = 0$$

gmb

$$3(x^2 + x - 2) = 0$$

$$3(x+2)(x-1) = 0$$

$$x+2=0, \quad x-1=0$$

$$x = -2, 1$$

$$y = -x^2 + 4$$

$$= -(-2)^2 + 4, \quad = -(1)^2 + 4$$

$$= -4 + 4$$

$$= 0$$

$$= -1 + 4$$

$$= 3$$

$$x = -2, y = 0$$

and

$$x = 1, y = 3$$

SOLVE EACH SYSTEM ALGEBRAICALLY

$$f(x) = x^2 - x - 6$$
$$g(x) = 2x - 2$$

$$y + 7 = x^2 + 9 + 3x$$
$$-4x^2 = 2y - 16$$

$$y - 2 = x^2 + 5x + 4$$
$$y + x = -3$$

Challenge

$$a(x) = x^3 - 2$$
$$b(x) = x^2 + 2x - 2$$

SOLUTIONS

$$x = 4, y = 6$$

$$x = -1, y = -4$$

$$x = -2, y = 0$$

$$x = -1, y = 6$$

$$x = -3, y = 0$$

$$x = 0, y = -2$$

$$x = 1, y = -1$$

$$x = 2, y = 6$$

Challenge

$$a(x) = x^3 - 2$$

$$b(x) = x^2 + 2x - 2$$

$$\begin{array}{r} x^3 - 2 = x^2 + 2x - 2 \\ \underline{-x^2 - 2x + 2} \\ x^3 - x^2 - 2x = 0 \end{array}$$

gcf

$$x(x^2 - x - 2) = 0$$

$$x(x-2)(x+1) = 0$$

$$x=0, x-2=0, x+1=0$$

$$x = 0, 2, -1$$

$$y = x^3 - 2$$

$0^3 - 2$	$2^3 - 2$	$(-1)^3 - 2$
-2	6	-3

$$\begin{array}{l} x=0, y=-2 \\ x=2, y=6 \\ x=-1, y=-3 \end{array}$$

Unit 11: Function Operations

Lesson #	Name	Recap	HW
11.1	Families of Functions		HW 11.1
11.2	Domain and Range of Functions		HW 11.2
11.3	Shifting Functions		Finish 11.3 QUIZ FRIDAY
11.4	QUIZ + Delta		Delta
11.5	Solving Systems Graphically		HW 11.5 *calculator*
11.6	Solving systems algebraically		HW 11.6 QUIZ!

