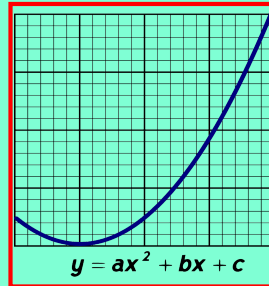


Math 125  
Fall 2021  
Lecture 20



Class QZ 15

Solve  $|2x-7| - 3 > 4$

final Ans in  
graphing, SBN, and I.N.

Methods used must be

Similar to class notes.

$$|2x-7| > 7$$

$$|2x-7| = 7$$

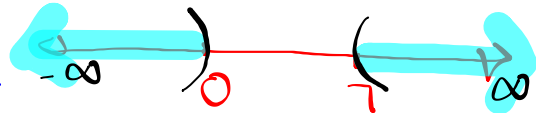
$$2x-7=7$$

$$x=7$$

$$2x-7=-7$$

$$x=0$$

Shade  
outside



SBN  $\{x \mid x < 0 \text{ or } x > 7\}$

I.N.  $(-\infty, 0) \cup (7, \infty)$

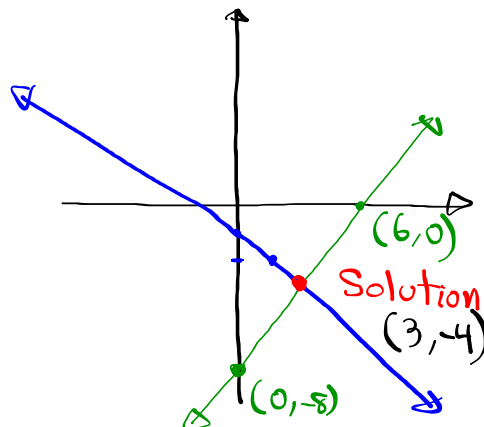
Solve by graphing

$$\begin{cases} y = -x - 1 \\ 4x - 3y = 24 \end{cases}$$

$$y = -x - 1$$

Y-Int (0, -1)  
m = -1

x	y
0	-8
6	0



Use subs. method

$$4x - 3(-x - 1) = 24$$

$$4x + 3x + 3 = 24$$

$$\begin{aligned} 7x &= 21 & x &= 3 \\ y &= -3 - 1 & y &= -4 \end{aligned}$$

Solution Set  $\{(3, -4)\}$ 

Use Subs. method to Solve

$$\begin{cases} y = -2x + 4 \\ 7x - 2y = 3 \end{cases}$$

$$7x - 2(-2x + 4) = 3$$

$$7x + 4x - 8 = 3$$

$$11x = 11 \quad \boxed{x=1}$$

$$y = -2(1) + 4$$

$$= -2 + 4$$

$$\boxed{y=2}$$

$$\boxed{(1, 2)}$$

$$\{(1, 2)\}$$

Solve by Subs. Method:

$$\begin{cases} y = 3x - 7 \\ 5x - 2y = 8 \end{cases}$$

$$5x - 2(3x - 7) = 8$$

$$5x - 6x + 14 = 8$$

$$-x = 8 - 14$$

$$-x = -6$$

$$\boxed{x = 6}$$

$$y = 3(6) - 7 = 18 - 7 = 11$$

$$\boxed{y = 11}$$

$$\boxed{(6, 11)}$$

$$\{(6, 11)\}$$

Solve by addition Method:

$$\begin{cases} \cancel{3x} - 4y = 11 \\ \cancel{-3x} + 2y = -7 \end{cases}$$

$$-2y = 4$$

$$\boxed{y = -2}$$

$$3x - 4(-2) = 11$$

$$3x + 8 = 11$$

$$3x = 3$$

$$\boxed{x = 1}$$

$$\Rightarrow (1, -2)$$

$$\{(1, -2)\}$$

SI schedule

Tuesdays

Thursdays

10:30-12:30

Fridays

10:15-11:15

1:15-2:25

Saturdays

8:00-10:00

Solve by addition method:

$$\begin{cases} 3x + 4y = -10 \\ 5x - 2y = 18 \end{cases} \Rightarrow \begin{cases} 3x + \cancel{4y} = -10 \\ 10x - \cancel{4y} = 36 \end{cases}$$

$$3x + 4y = -10$$

$$3(2) + 4y = -10$$

$$6 + 4y = -10$$

$$4y = -16$$

$$\boxed{y = -4}$$

$$\begin{array}{r} 13x \qquad \qquad = 26 \\ \hline \end{array}$$

$$\boxed{x = 2}$$

$$(2, -4)$$

Solve by addition method:

$$\begin{cases} 7x + 2y = 5 \\ 2x + 3y = 16 \end{cases} \Rightarrow \begin{cases} 21x + \cancel{6y} = 15 \\ -4x - \cancel{6y} = -32 \end{cases}$$

$$2x + 3y = 16$$

$$2(-1) + 3y = 16$$

$$3y = 18$$

$$\boxed{y = 6}$$

$$\begin{array}{r} 17x \qquad \qquad = -17 \\ \hline \end{array}$$

$$\boxed{x = -1}$$

Final Ans

$$(-1, 6)$$

Solve

$$\begin{cases} 5x - 2y = 4 \\ -10x + 4y = 7 \end{cases} \Rightarrow \begin{cases} 10x - 4y = 8 \\ -10x + 4y = 7 \end{cases}$$

$$0 = 15$$

False  $\Rightarrow \emptyset$ 

Solve

$$\begin{cases} y = 3x - 2 \\ 15x - 5y = 10 \end{cases} \quad \begin{aligned} 15x - 5(3x - 2) &= 10 \\ 15x - 15x + 10 &= 10 \end{aligned}$$

$$10 = 10$$

True

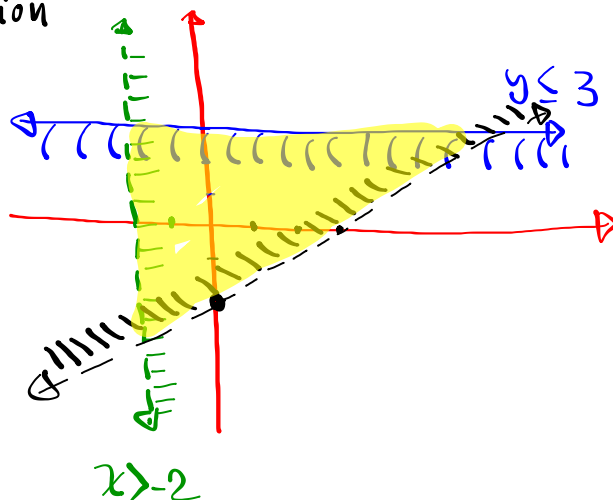
infinite # of  
Solutions

$$\{(x, y) \mid y = 3x - 2\}$$

Shade the Solution

$$\begin{cases} y \leq 3 \\ x > -2 \\ y > \frac{2}{3}x - 2 \end{cases}$$

Dashed line



Solve  $|2x-7| = |2x+7| = 0$

$$|2x-7| = |2x+7|$$

$$2x-7 = 2x+7$$

OR

$$2x-7 = -(2x+7)$$

$$2x-2x = 7+7$$

$$2x-7 = -2x-7$$

$$0 = 14$$

False

$$2x + 2x = -7+7$$

$$4x = 0$$

$$x = \frac{0}{4}$$

$$\boxed{x=0}$$

$$\{0\}$$

Solve  $|3x+2| + 7 < 4$

$$|3x+2| < 4-7$$

$$|3x+2| < -3 \quad \text{False}$$

$$\emptyset$$

Solve  $-2|5x-3| - 7 < 5$

$$-2|5x-3| < 12$$

$$|5x-3| > \frac{12}{-2}$$

$$\rightarrow |5x-3| > -6$$

True

$$\mathbb{R}$$

$$\text{Simplify: } \frac{x^2 - 7x - 18}{2x^2 + 3x - 2} = \frac{(x-9)(\cancel{x+2})}{(2x-1)(\cancel{x+2})}$$

$$= \frac{x-9}{2x-1}$$

$$\text{Divide: } \frac{5x+5}{7x^2-7x} \div \frac{4x^2-9}{2x^2+x-3}$$

$$= \frac{5x+5}{7x^2-7x} \cdot \frac{2x^2+x-3}{4x^2-9}$$

$$= \frac{5(x+1)}{7x(x-1)} \cdot \frac{\cancel{(2x+3)}(x-1)}{\cancel{(2x+3)}(2x-3)}$$

$$= \frac{5(x+1)}{7x(2x-3)}$$

$$\text{Simplify: } \frac{x^2 + 2x - 2}{x^2 + 3x - 10} + \frac{5x + 12}{x^2 + 3x - 10}$$

$$= \frac{x^2 + 2x - 2 + 5x + 12}{x^2 + 3x - 10} = \frac{x^2 + 7x + 10}{x^2 + 3x - 10}$$

$$= \frac{\cancel{(x+5)}(x+2)}{(x-2)\cancel{(x+5)}} = \frac{x+2}{x-2}$$

Simplify:

$$\frac{3}{x^2+x-6} - \frac{2}{x^2+4x+3}$$

$$= \frac{3(x+1)}{(x+3)(x-2)(x+1)} - \frac{2(x-2)}{(x+3)(x+1)(x-2)}$$

$$= \frac{3(x+1) - 2(x-2)}{(x+3)(x-2)(x+1)} = \boxed{\frac{x+7}{(x+3)(x-2)(x+1)}}$$

Cross-Multiply, then Solve

$$\frac{3}{x-2} = \frac{2}{x+1}$$

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

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

$$3x - 2x = -4 - 3$$

$$\boxed{x = -7} \quad \{-7\}$$

$$x-2 \neq 0$$

$$x \neq 2$$

$$x+1 \neq 0$$

$$x \neq -1$$



Excluded Values



Solve:

$$\frac{x}{x-3} = \frac{3}{x-3} + 9$$

Hint:  
Multiply by

LCD =  $x-3$

$$\cancel{(x-3)} \cdot \frac{x}{\cancel{x-3}} = \cancel{(x-3)} \cdot \frac{3}{\cancel{x-3}} + (x-3) \cdot 9$$

$x-3 \neq 0$

$x \neq 3$

$$x = 3 + 9(x-3)$$

$$x = 3 + 9x - 27$$

$$x - 9x = 3 - 27$$

$$-8x = -24$$

$$x = \frac{-24}{-8}$$

$$\boxed{x=3}$$
  
E.V.

Book Says

$$\boxed{\emptyset}$$

Class QZ 16

shade the solution

$$\begin{cases} y \geq -2 \\ x \leq 3 \\ y < \frac{2}{3}x \end{cases}$$

