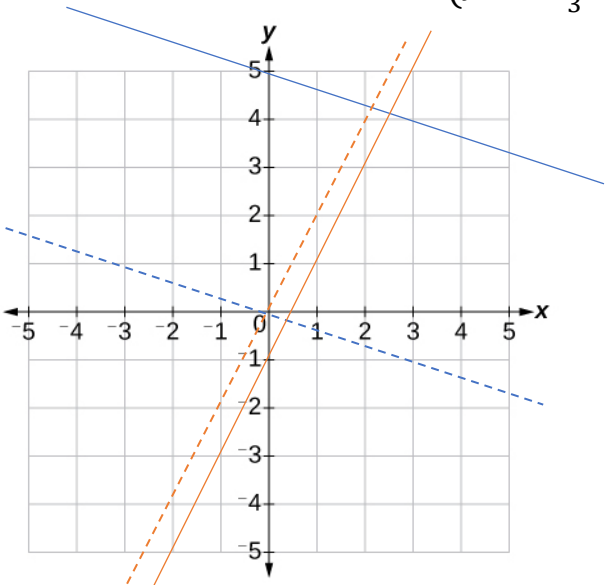
MATH 6 CLASS WORK 23

April 24, 2022

Solving System of Linear Equations II

As we discussed, system of equations can be solved graphically:

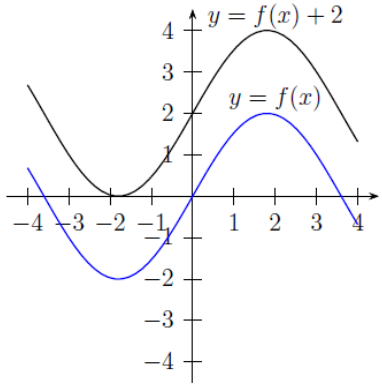
$$\begin{cases} 2x - y = 1 \\ x + 3y = 15 \end{cases} \Rightarrow \begin{cases} y = 2x - 1 \\ y = -\frac{1}{3}x + 5 \end{cases}$$

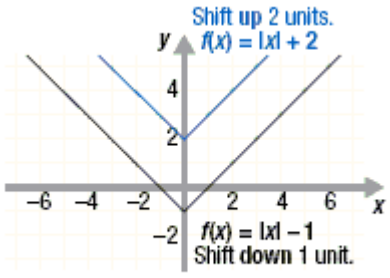


$$\begin{cases} y = 2x \\ y = -\frac{1}{3}x \end{cases} \qquad \begin{cases} y = 2x - 1 \\ y = -\frac{1}{3}x + 5 \end{cases}$$

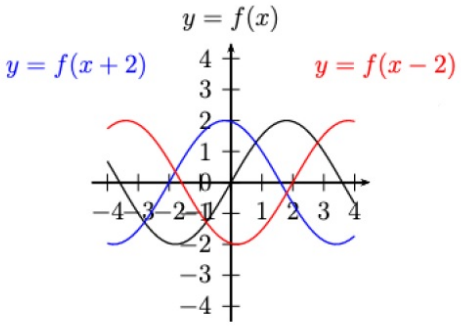
Graph's transformation

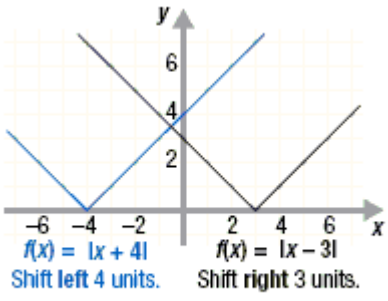
Vertical Transformation: adding constant number c to the right-hand side of equation shifts the graph by c units along y axis.





Horizontal Transformation: adding constant number c to x shifts the graph by c units along x axis: right, if c is negative, left if c is positive





MATH 6 HOMEWORK 23

Use quadrille paper for graphing!

1. Solve the system of equations by graphing the two lines.

$$\begin{cases} x + 3y = 10 \\ 2x + y = 5 \end{cases}$$

2. Graph these two lines and solve the system of equations

$$\begin{cases} 6x - 5y = -3 \\ x + y = 5 \end{cases}$$

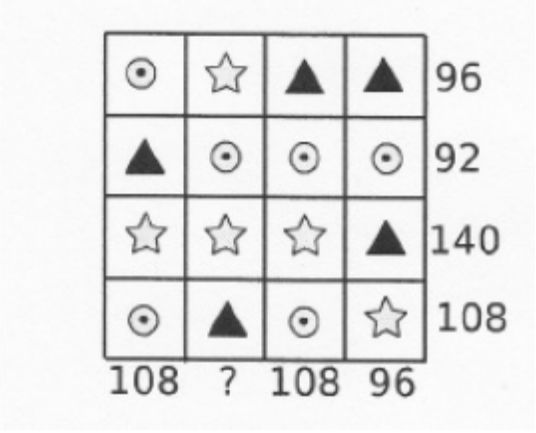
3. Plot each line on a separate xy coordinate plane using knowledge about transformation:
   a. $y = |2(x + 2)|$ think line $y = |2x|$ moves along x by -2
   b. $y = |2x| + 4$

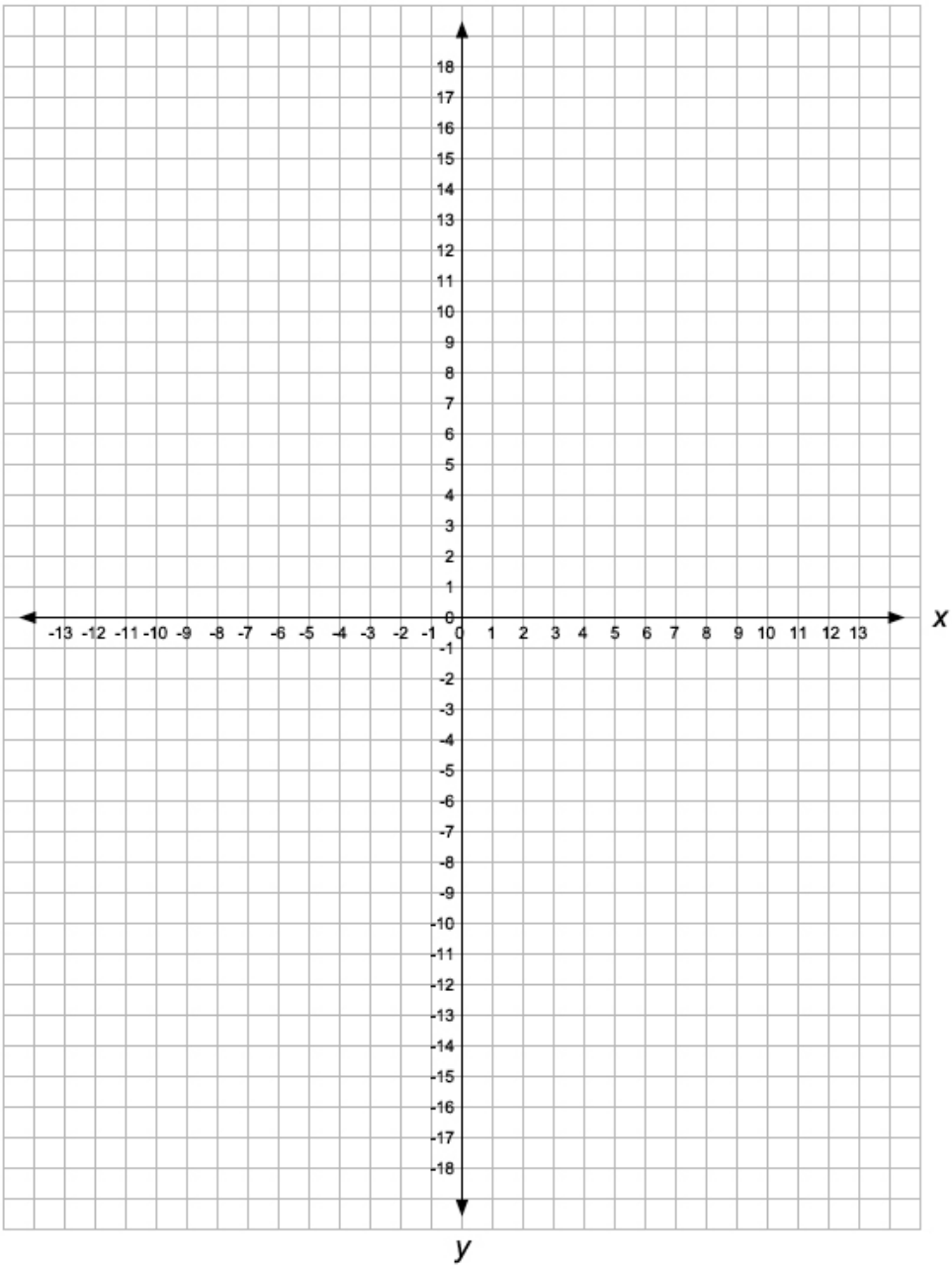
Note: If you find it difficult to sketch, you can make an x/y table, something like this:

x	y
-3	
-2	
-1	
0	
1	
2	
3	

4. Solve inequalities:
   a. $(x + 1)(x + 2) < 0$
   b. $(x + 1)(x + 2) > 0$
5. Solve equations:
   a. $\frac{3x+2a}{2a-5x} = -1$
   b. $\frac{1}{2}x + \frac{1}{3}x = x - \frac{1}{12}$

6. Draw a line through points (4, −2) and (−2, 4). Determine the equation of this line $y = ax + b$. Think what is the tilt a? What is the shift b?
7. In the figure below, each symbol stands for a number. The sum of numbers in each column or row is written next to the column or row — except for the second column, where the sum is not known. Can you find this missing sum?

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x
y