

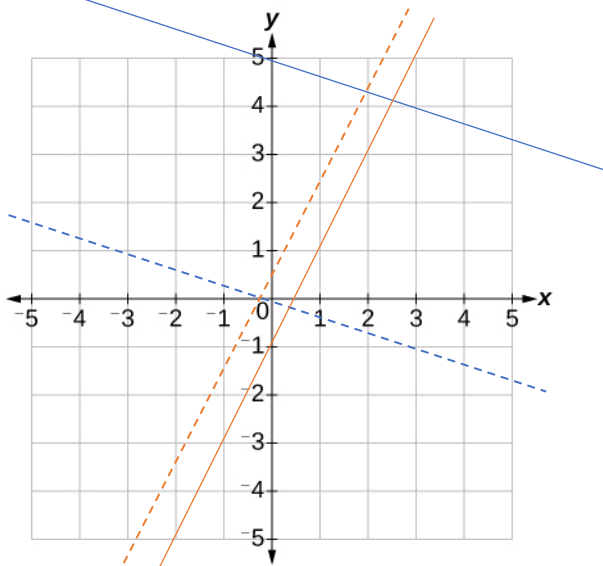
# MATH 6 CLASS WORK 23

April 11, 2021

## Solving System of Linear Equations II

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

$$\begin{cases} 2x - y = 1 \\ x + 3y = 24 \end{cases} \Rightarrow \begin{cases} y = 2x - 1 \\ y = -\frac{1}{3}x + 6 \end{cases}$$

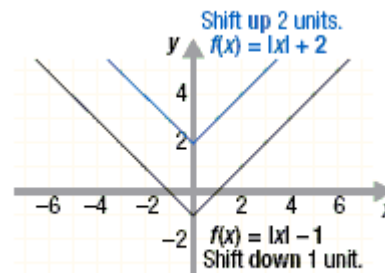
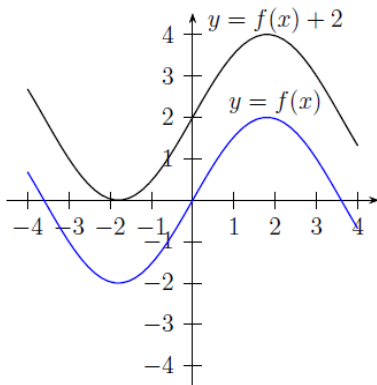


$$\begin{cases} y = 2x \\ y = -\frac{1}{3}x \end{cases}$$

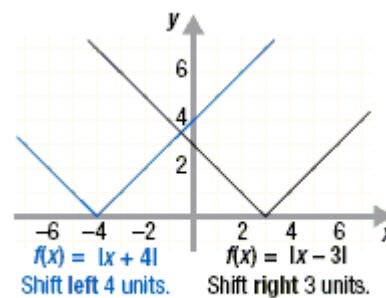
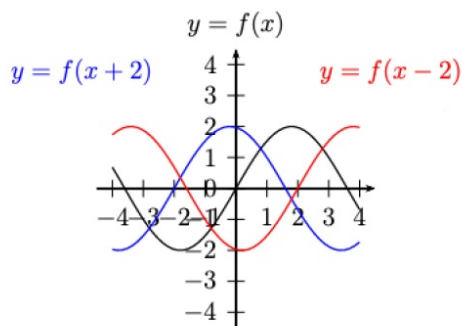
$$\begin{cases} y = 2x - 1 \\ y = -\frac{1}{3}x + 6 \end{cases}$$

# 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

Note: Last page is the graph for your convenience

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.  $y = |2x| + 4$

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

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

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?

⊙	☆	▲	▲	96
▲	⊙	⊙	⊙	92
☆	☆	☆	▲	140
⊙	▲	⊙	☆	108
108	?	108	96	

