

WIN week 4 Day 1 – writing and graphing equations of lines

Students will graph equations of lines.

Warm up –

1. Write the equation of a line in point slope form through (2,3) and (-4, 1).

$$m = \frac{1-3}{-4-2} = \frac{-2}{-6} = \frac{1}{3}$$

$$y - 1 = \frac{1}{3}(x + 4)$$

or

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

2. Convert you equation to slope intercept form.

$$y - 1 = \frac{1}{3}x + \frac{4}{3}$$

$$y = \frac{1}{3}x + \frac{7}{3}$$

3. Convert you equation to standard form.

$$-3\left(-\frac{1}{3}x + y = \frac{7}{3}\right)$$

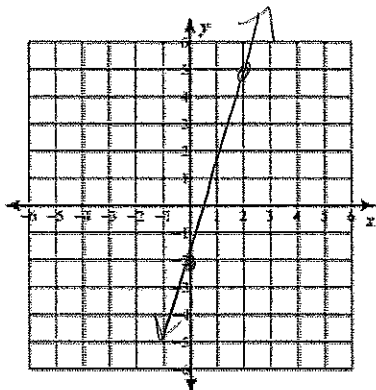
$$x - 3y = -7$$

A. Graphing equations in slope intercept form. Steps

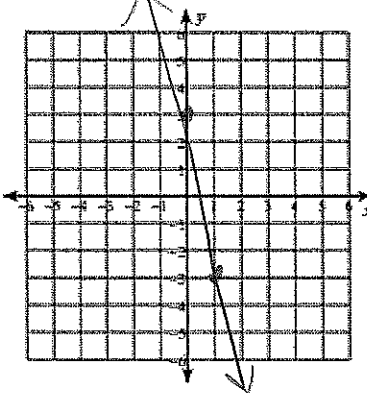
1. Start at the y intercept.
2. "do" the slope $-\frac{\text{rise}}{\text{run}}$.

Examples

1) $y = \frac{7}{2}x - 2$

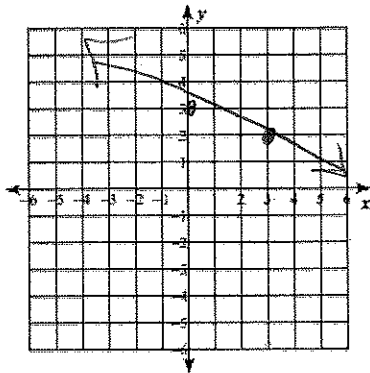


2) $y = -6x + 3$

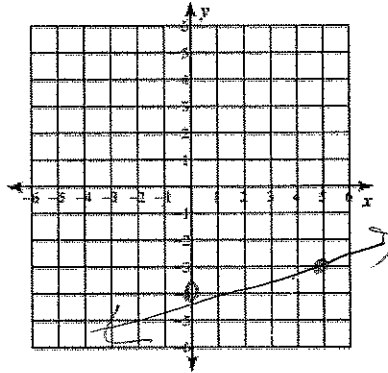


Practice

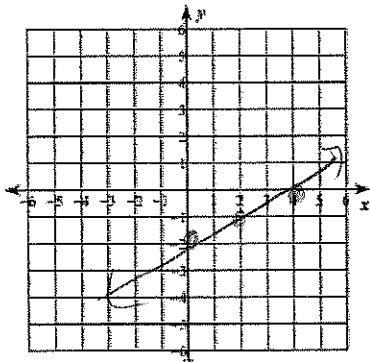
9) $y = -\frac{1}{3}x + 3$



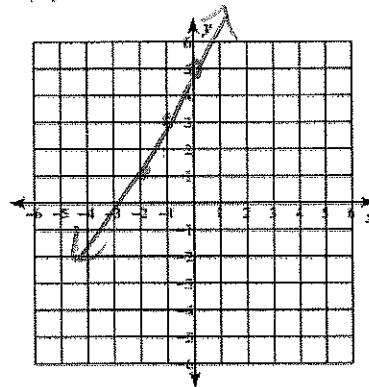
10) $y = \frac{1}{5}x - 4$



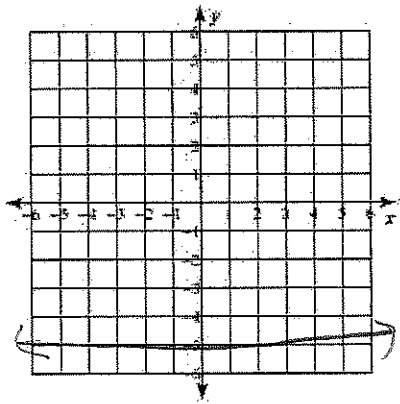
11) $y = \frac{1}{2}x - 2$



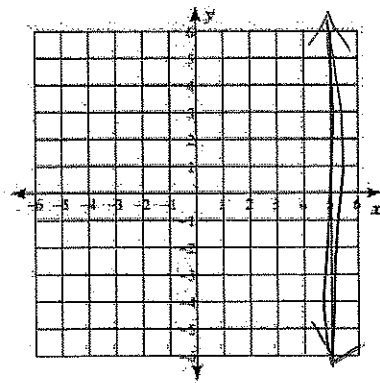
12) $y = 2x + 5$



3) $y = -5$



6) $x = 5$



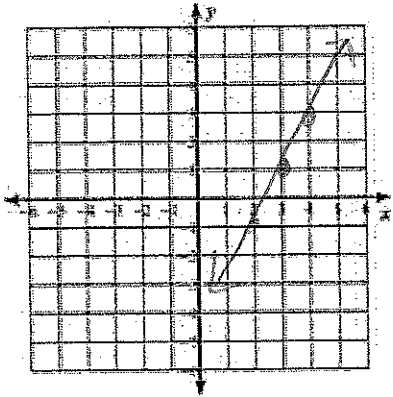
B. Graphing equations in point slope form.

Two options

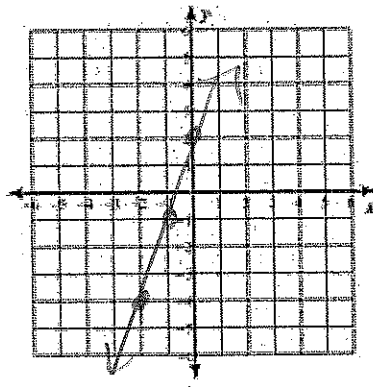
- Convert to slope intercept form
- OR choose the starting point (x_1, y_1) and then "do" the slope

Examples:

1. $y - 1 = 2(x - 3)$ $(3, 1)$

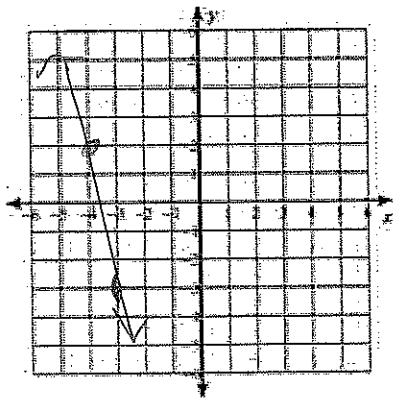


2. $y + 4 = 3(x + 2)$ $(-2, -4)$

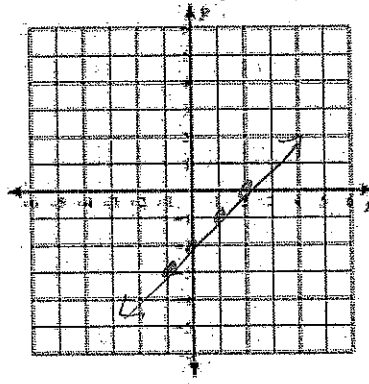


Practice:

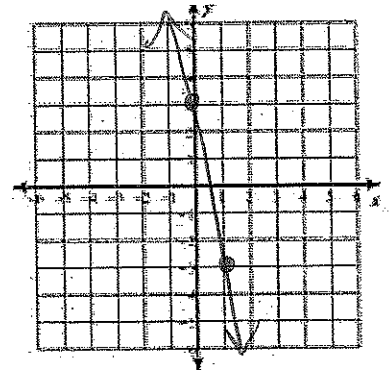
7. $y - 2 = -5(x + 4)$ $(-4, 2)$



8. $y + 3 = (x + 1)$ $(-1, -3)$



9. $y - 3 = -6(x - 1)$



C. Graphing equations in standard form.

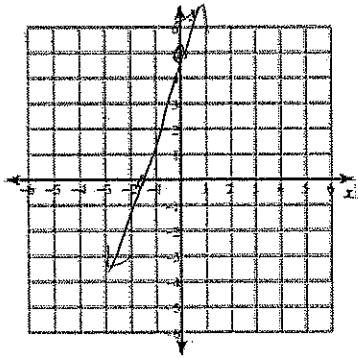
Two options:

- Convert to slope intercept form
- Find the x and intercept.

Examples

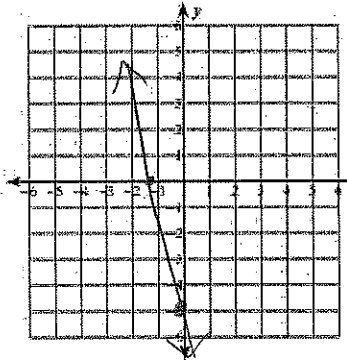
2) $10x - 3y = -15$

yint
(0, 5)
xint
(-1.5, 0)



5) $7x + 2y = -10$

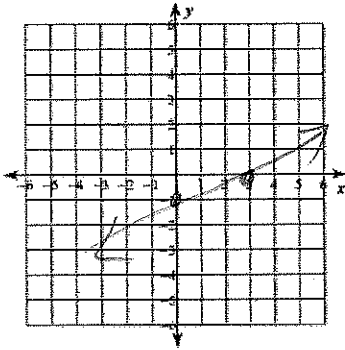
yint
(0, -5)
xint
(-10/7, 0)



Practice:

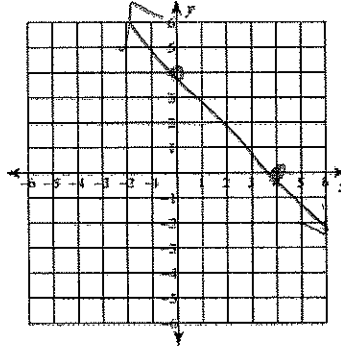
11) $x - 3y = 3$

yint
(0, -1)
xint
(3, 0)



12) $x + y = 4$

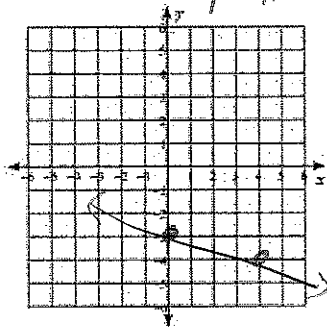
yint
(0, 4)
xint
(4, 0)



10) $x + 4y = -12$

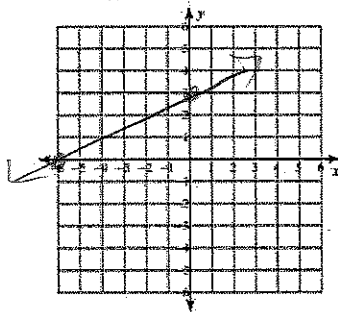
$4y = -x - 12$
 $y = -\frac{1}{4}x - 3$

yint
(0, -3)
xint
(-12, 0)



6) $x - 2y = -6$

yint
(0, 3)
xint
(-6, 0)

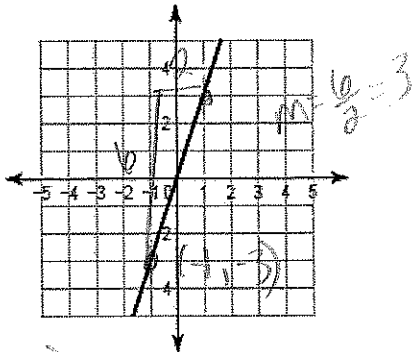


WIN Week 4 Day 2

For each graph.

1. Write the equation in point slope form.
2. Convert the equation to slope intercept form.
3. Convert the equation to standard form.

1)



$$1.) y + 3 = 1(x + 1)$$

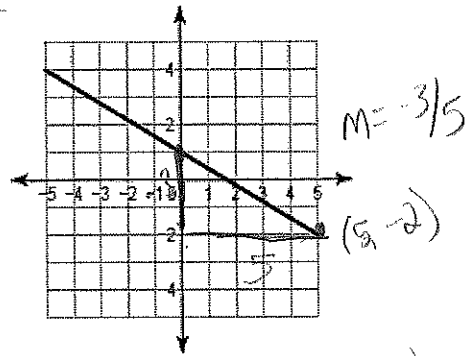
$$y + 3 = x + 1$$

$$2.) y = x - 2$$

$$-x + y + 2 = 0$$

$$3.) x - y - 2 = 0$$

2)



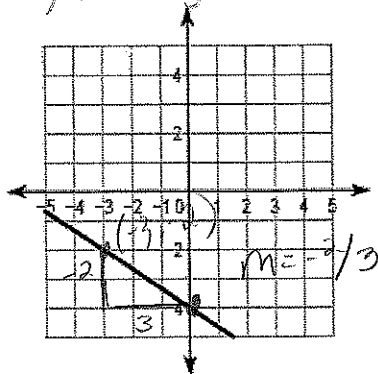
$$1.) y + 2 = -\frac{3}{5}(x - 5)$$

$$y + 2 = -\frac{3}{5}x + 3$$

$$2.) y = -\frac{3}{5}x + 1$$

$$5(\frac{3}{5}x + y - 1) = 0$$

$$3.) 4) 3x + 5y - 5 = 0$$



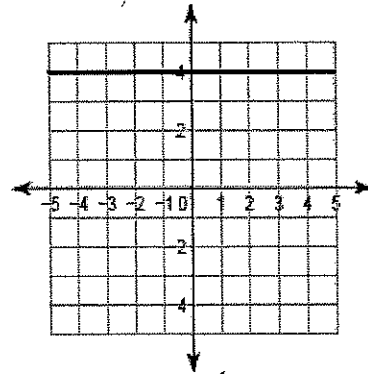
$$1.) y + 2 = -\frac{2}{3}(x + 3)$$

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

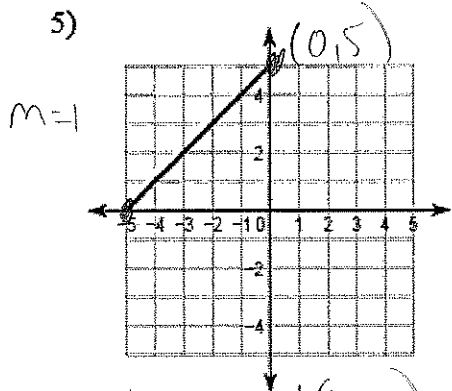
$$y = -\frac{2}{3}x - 4$$

$$2.) \frac{2}{3}x + y + 4 = 0$$

$$3.) 2x + 3y + 12 = 0$$



$$y = 4$$

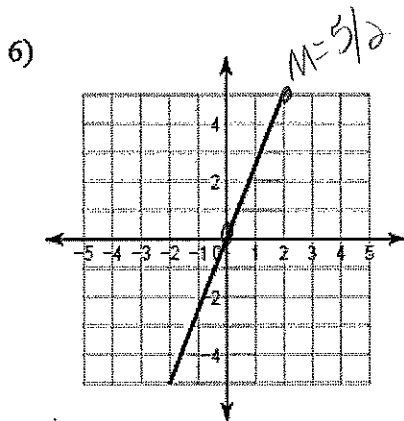


1.) $y-5 = 1(x-0)$
 $y-5 = x$

2.) $y = x+5$

$-x+y = 5$

3.) $x-y = -5$

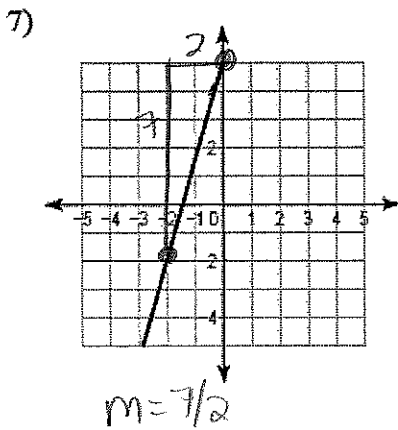


1.) $y = 0 = 5/2(x-0)$

2.) $y = 5/2x$

$-5/2x + y = 0$

3.) $5x - 2y = 0$



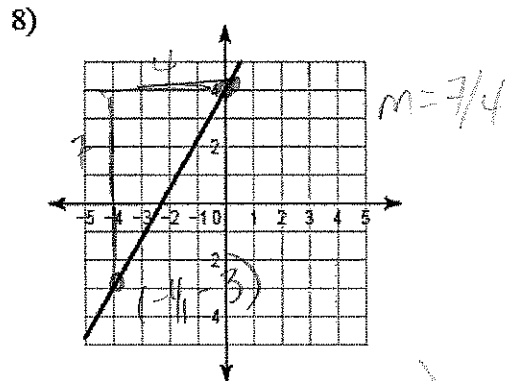
1.) $y-2 = 7/2(x+0)$

$y-2 = 7/2x+7$

2.) $y = 7/2x+9$

$-7/2x + y = 9$

3.) $7x - 2y = -18$



$y+3 = 7/4(x+4)$

$y+3 = 7/4x+7$

$y = 7/4x+4$

Win review – writing and graphing equations of lines

1. A line has a slope of $1/3$ and goes through the point $(-4, 4)$.

a. Write the equation of the line in point slope form.

$$y - 4 = \frac{1}{3}(x + 4)$$

b. Write the equation of the line in slope intercept form.

$$y - 4 = \frac{1}{3}x + \frac{4}{3}$$

$$y = \frac{1}{3}x + \frac{16}{3}$$

c. Write the equation of the line in standard form.

$$-3\left(-\frac{1}{3}x + y = \frac{16}{3}\right)$$

$$x - 3y = -16$$

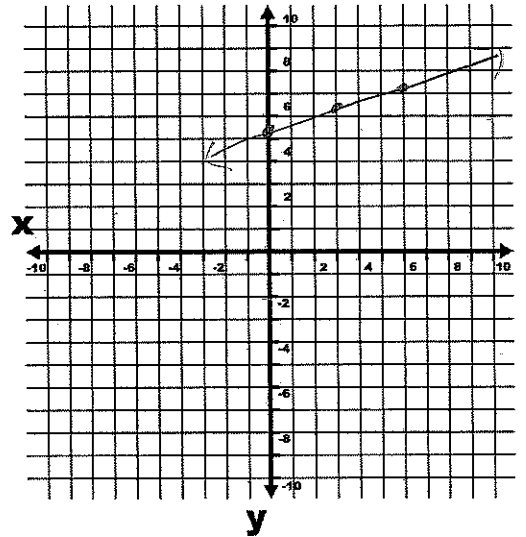
d. What is the x intercept for the line?

$$(-16, 0) \text{ x int}$$

e. What is the y intercept for the line?

$$(0, 16/3)$$

f. Graph the line.



2. A line is shown.

a. What is the slope of the line?

$$m = -2/3$$

b. Write the equation of the line in point slope form.

$$y - 3 = -2/3(x - 3)$$

c. Write the equation of the line in slope intercept form.

$$y = -2/3x + 5$$

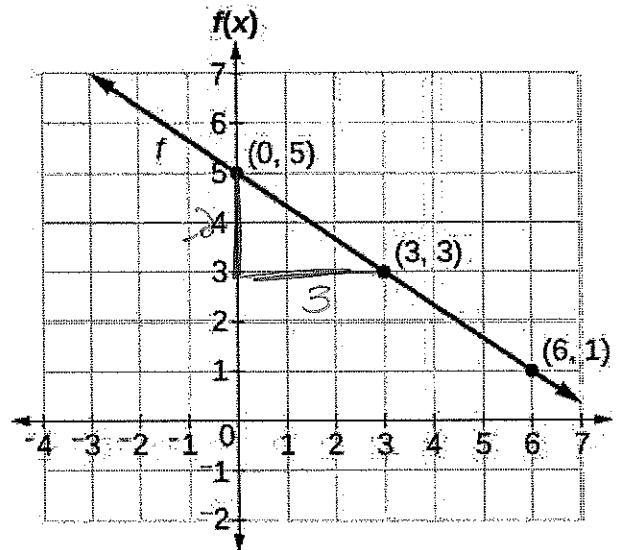
d. Write the equation of the line in standard form.

$$3\left(-\frac{2}{3}x + y = 5\right)$$

$$-2x + 3y = 15$$

e. What is the x intercept for the line?

$$(15/2, 0)$$

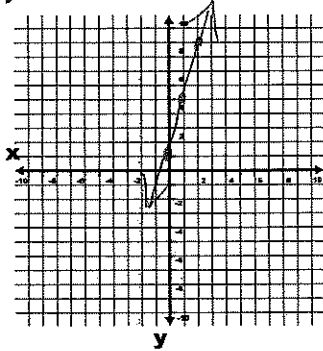


f. What is the y intercept for the line?

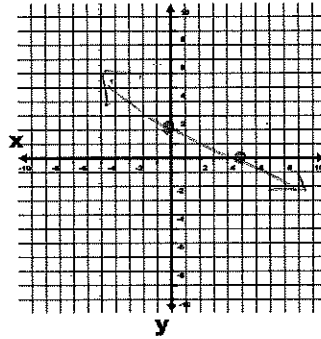
$(0, 5)$

3. Graph each line.

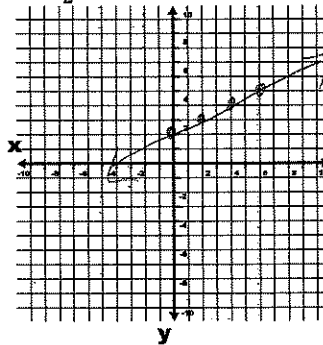
a. $y = 4x + 1$



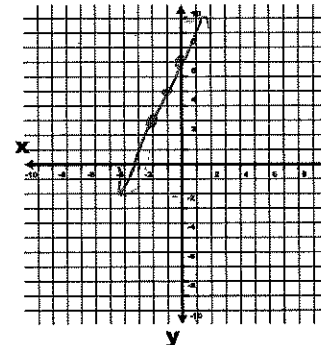
e. $y = -\frac{2}{5}x + 2$



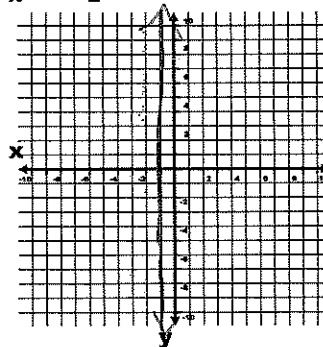
b. $y = \frac{1}{2}x + 2$



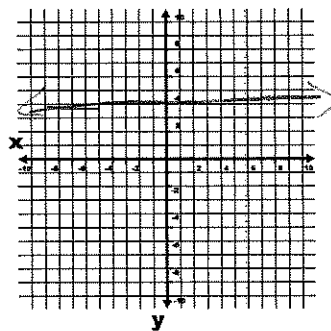
f. a line through $(-2, 3)$ with a slope of 2.



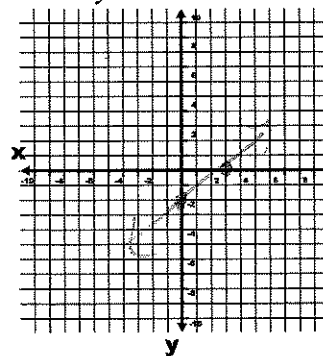
c. $x = -1$



g. $y = 4$

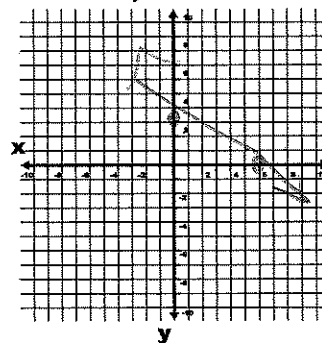


d. $2x - 3y = 6$



y int
 $(0, -2)$
x int
 $(3, 0)$

h. $3x + 6y = 18$



y int
 $(0, 3)$
x int
 $(6, 0)$