

Math 115

Spring 2019

Lecture 9

$$? a^2 + b^2 = c^2 ?$$

$$y = mx + b \quad ? \quad d = rt$$

Feb 19-8:47 AM

Ch. 3 Introduction to graphing

Graphing Area

Rectangular
Coordinate
System

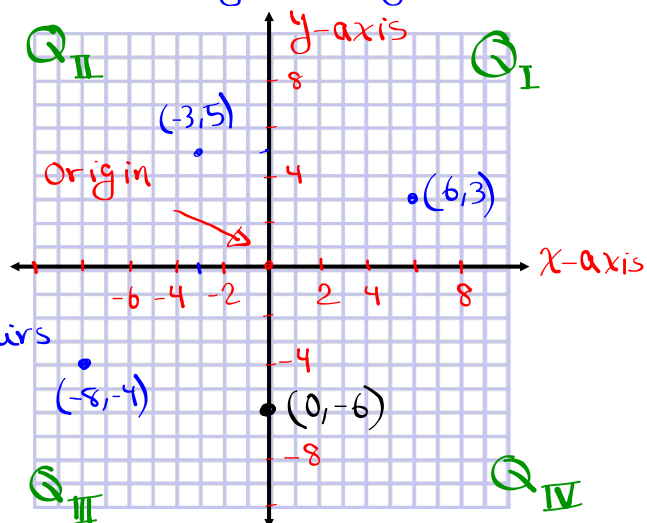
Points \rightarrow ordered-Pairs

(x, y)

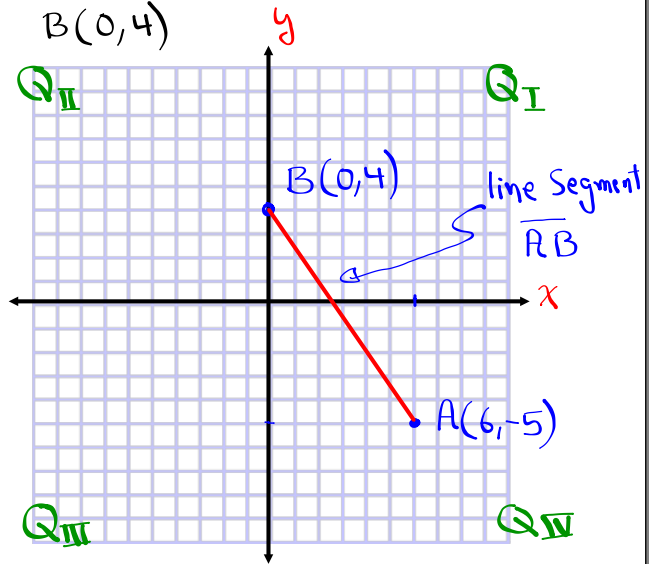
Plot $(6, 3)$

Plot $(-3, 5)$

Plot $(-8, -4)$ & $(0, -6)$



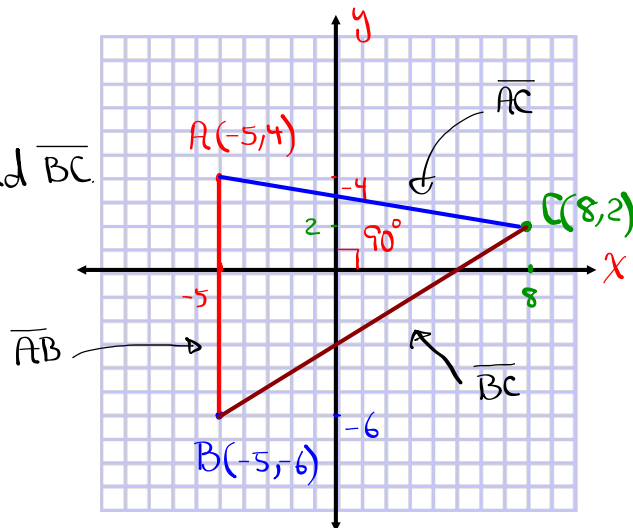
Plot $A(6, -5)$ and $B(0, 4)$



Given $A(-5, 4)$, $B(-5, -6)$, and $C(8, 2)$.

1) Plot A , B , and C .

3) Draw \overline{AB} , \overline{AC} , and \overline{BC} .



Types of line:

1) Vertical $x=a$
 $x=4$

2) Horizontal $y=b$
 $y=-5$

3) Slant

Standard $\rightarrow Ax + By = C$ $2x + 3y = 12$

Slope-Int $\rightarrow y = mx + b$ $y = \frac{1}{2}x - 4$

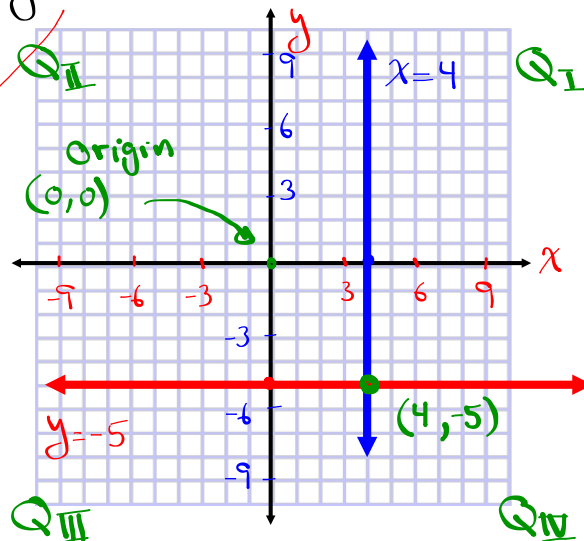
$y - y_1 = m(x - x_1)$ $y - 3 = \frac{-2}{3}(x + 4)$

↑
Point-Slope

Graph $x=4$ and $y=-5$ in the same Coordinate System.

Vertical line

Horizontal line



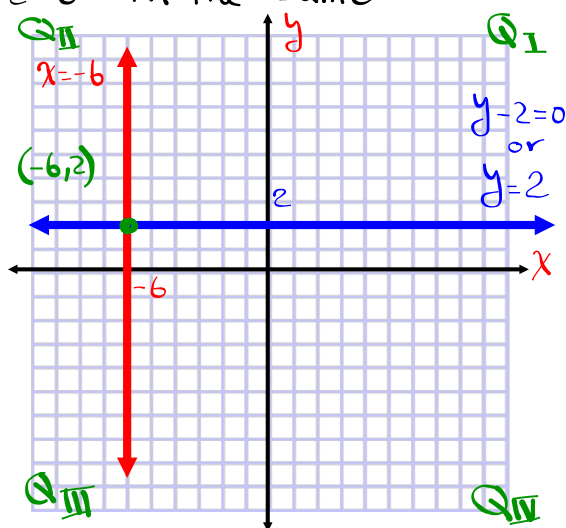
Graph $x = -6$, and $y - 2 = 0$ in the Same
Coordinate System.

$$x = -6$$

V.L.

$$y - 2 = 0$$

$$y = 2$$



Graphing slant line $Ax + By = C$ by intercept

method:

x	y
0	?
?	0

← Y-Int

← X-Int

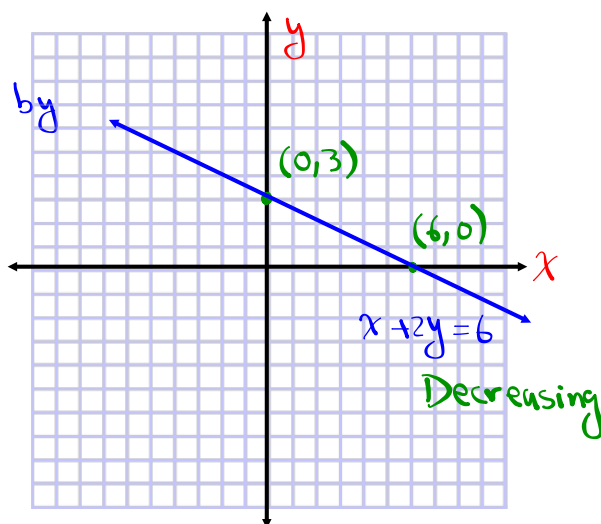
Graph $x + 2y = 6$ by

intercept method

x	y
0	3
6	0

Y-Int

X-Int



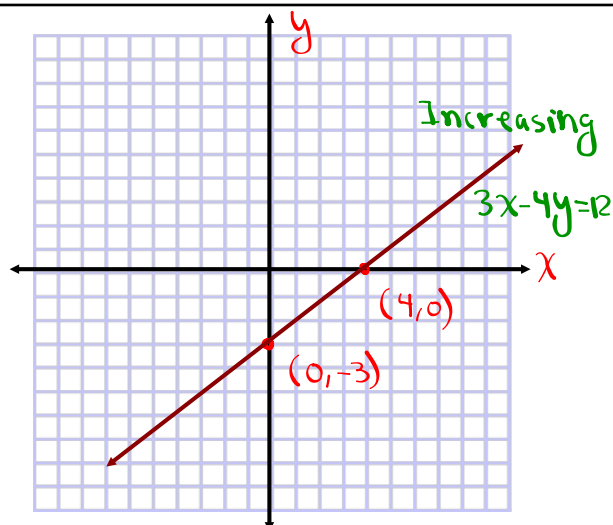
Graph

$3x - 4y = 12$ by
intercept method:

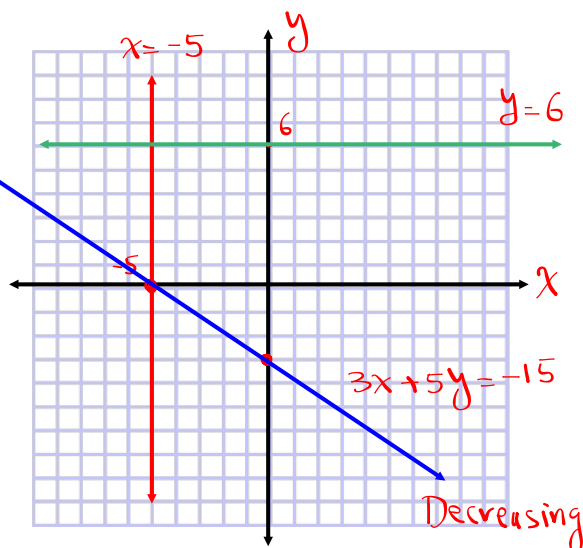
x	y
0	-3
4	0

Y-Int

X-Int

Graph $x = -5$, $y = 6$, and

$3x + 5y = -15$ in
the same coordinate
system.

 $x = a \rightarrow$ V.L. $y = b \rightarrow$ H.L. $Ax + By = C \rightarrow$ S.L. $x = -5$ V.L. $y = 6$ H.L.

$$3x + 5y = -15$$

Slant line

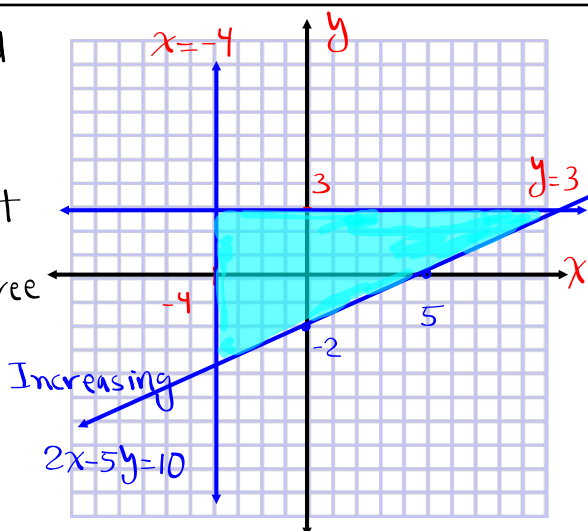
x	y
0	-3
-5	0

Graph $x = -4$, $y = 3$, and
 $2x - 5y = 10$.

Shade the region that
 is bounded by all three

lines.

$$\begin{array}{c|c} x & y \\ \hline 0 & -2 \\ 5 & 0 \end{array}$$



Find two consecutive integers such that
 the first one is equal to the difference
 of 79 and 3 times the second one.

First $\rightarrow x$

$$\text{First} = 79 - 3 \cdot \text{Second}$$

Second $\rightarrow x+1$

$$x = 79 - 3(x+1)$$

$$x = 79 - 3x - 3$$

$$x + 3x = 76$$

$$4x = 76$$

$$x = \frac{76}{4}$$

$$\boxed{x = 19}$$

19 and 20

Ans.

Find two consecutive even integers such that 3 times the smaller one increased by 5 times the larger one is equal to 154.

First $\rightarrow x$

$$3 \cdot \text{Smaller} + 5 \cdot \text{larger} = 154$$

Second $\rightarrow x+2$

$$3 \cdot x + 5(x+2) = 154$$

$$3x + 5x + 10 = 154$$

$$8x = 154 - 10$$

$$8x = 144$$

$$\boxed{x = 18}$$

Ans:

18 & 20

Find two consecutive odd integers such that 6 times the smaller one reduced by 783 is equal to -9 times the larger one.

Smaller $\rightarrow x$

$$6 \cdot \text{Smaller} - 783 = -9 \cdot \text{larger}$$

Larger $\rightarrow x+2$

$$6x - 783 = -9(x+2)$$

$$6x - 783 = -9x - 18$$

$$6x + 9x = -18 + 783$$

$$15x = 765$$

$$x = \frac{765}{15} \quad \boxed{x = 51}$$

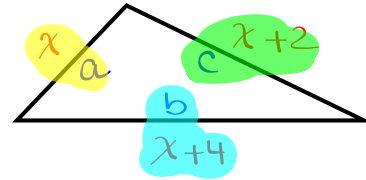
Ans.

51 & 53

Perimeter of a triangle is 219 inches.

Three sides are three consecutive odd integers.

1) Draw & label such triangle.



2) Find all three sides.

$$P = 219$$

$$a + b + c = 219$$

$$x + x + 4 + x + 2 = 219$$

$$3x + 6 = 219$$

$$3x = 213$$

$$\rightarrow x = \frac{213}{3}$$

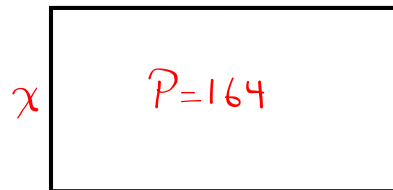
$$\boxed{x = 71}$$

Ans. 71 in, 73 in, and 75 in.

Perimeter of a rectangular room is 164 meters.

Length and width are two consecutive even integers.

1) Draw & label such room.



2) Find its dimensions.

3) Find its area.

$$P = 164$$

$$2L + 2W = 164$$

$$2(x + 2) + 2x = 164$$

$$2x + 4 + 2x = 164$$

$$\rightarrow 4x = 160$$

$$\boxed{x = 40}$$

$$A = LW$$

$$\begin{aligned} &= 40(42) \\ &= 1680 \end{aligned}$$

Dimensions: 40m by 42m

Area: 1680 m²

52 people in a meeting.

The number of females was 1 more than
twice the number of males.

How many females?

Males $\rightarrow x$

Females $\rightarrow 2x + 1$
 $= 2(17) + 1$
 $= 35$

$$\text{Males} + \text{Females} = 52$$

$$x + 2x + 1 = 52$$

$$3x = 51$$

$$x = 17$$

Work on
 SG 4, 5, and 6.

Ans: 35 Females