x and y-intercepts

What does it mean to **INTERCEPT** a pass in football?

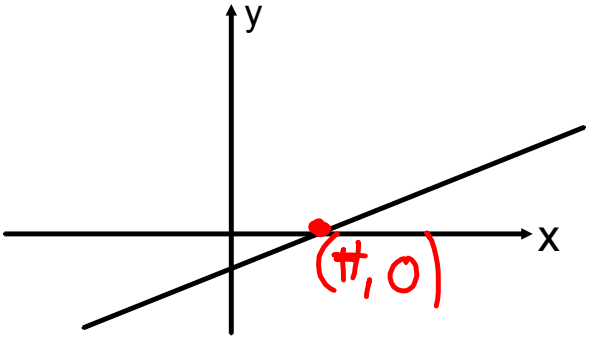
The path of the defender **crosses** the path of the thrown football.

In algebra, what are x- and y-intercepts?

x-intercept:

*where the line crosses the x-axis

*the y-value is **ALWAYS** zero!

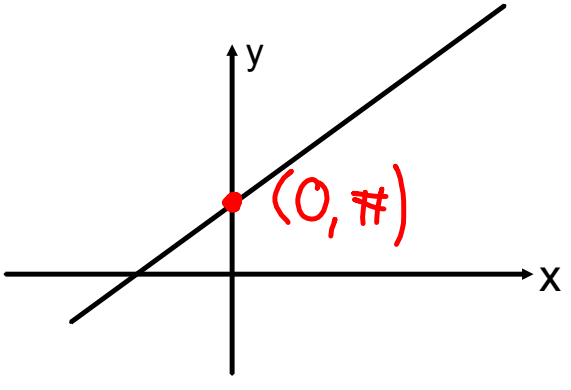


y-intercept:

*where the line crosses the y-axis

*the x-value is **ALWAYS** zero!

*the "b" in the equation, y = mx + b



Steps for Finding the x-intercept:

1. Sub ZERO in for "y"
2. Simplify and solve for x
3. Write the co-ordinate (x-value, 0)

$2x+4y=6$

$2x+4(0)=6$

$\frac{2x}{2}=\frac{6}{2}$

$x=3$

$(x, y) \rightarrow (3, 0)$

Steps for Finding the y-intercept:

1. Sub ZERO in for "x"
2. Simplify and solve for y
3. Write the co-ordinate (0, y-value)

$2x+4y=6$

$2(0)+4y=6$

$(0, \frac{3}{2})$

$\frac{4y}{4}=\frac{6}{4}$

$y=\frac{3}{2}$

Ex. 1: Find the x and y-intercepts, then graph the line.

a. $x - 2y = 12$

x-int

Sub 0 in for y

$x - 2(0) = 12$

$x - 0 = 12$

$x = 12$

(x, y)

$(12, 0)$

y-int

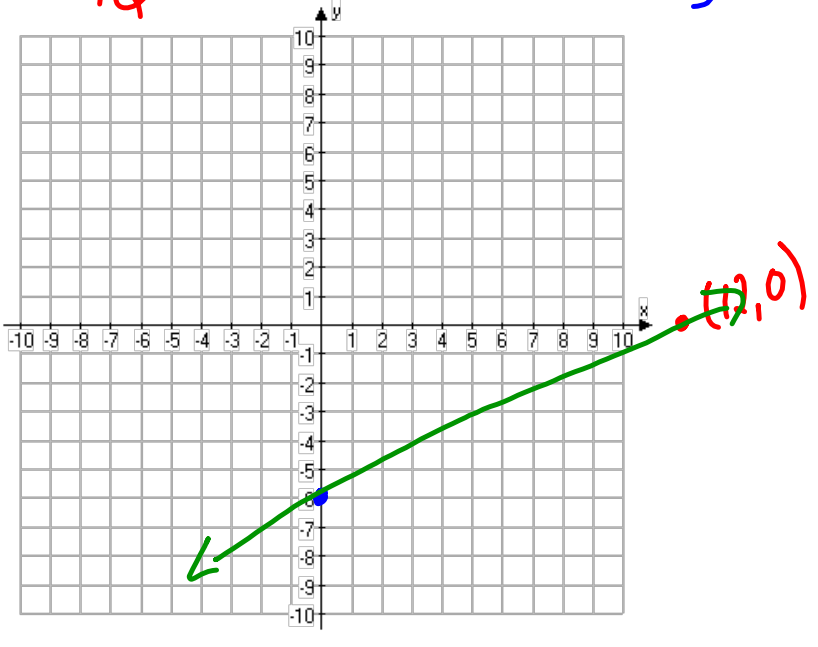
Sub 0 in for x

$0 - 2y = 12$

$\frac{-2y}{-2} = \frac{12}{-2}$

$y = -6$

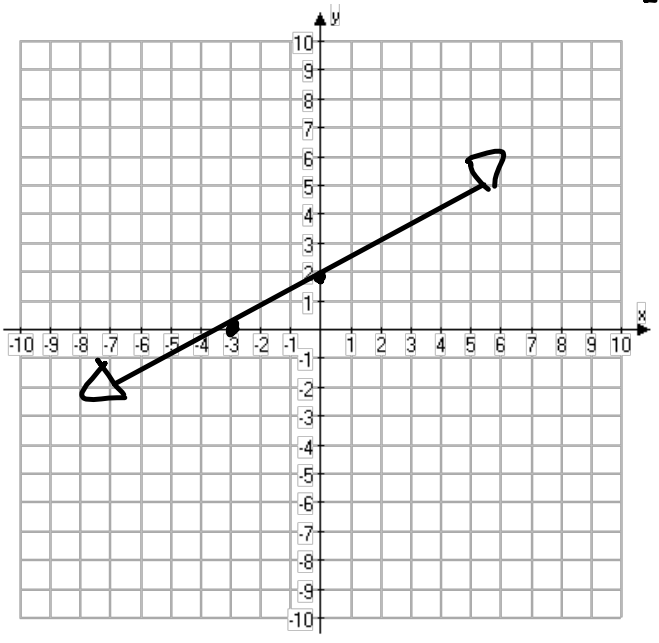
$(0, -6)$



b. $-3x + 5y = 9$

X-int
-> sub 0 for y
$-3x + 5(0) = 9$
$-3x = 9$
$x = -3$
$\therefore (-3, 0)$

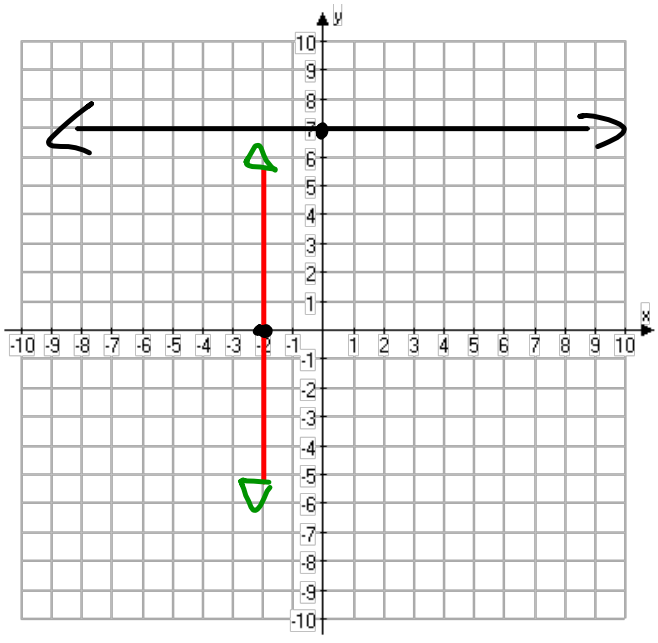
y-int
Sub 0 in for x
$-3(0) + 5y = 9$
$5y = 9$
$y = \frac{9}{5}$
$= 1.8$
$(0, 1.8)$



c. $y = 7$

X-int = none

y-int = 7

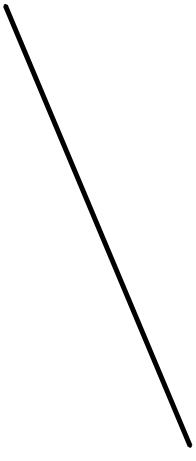


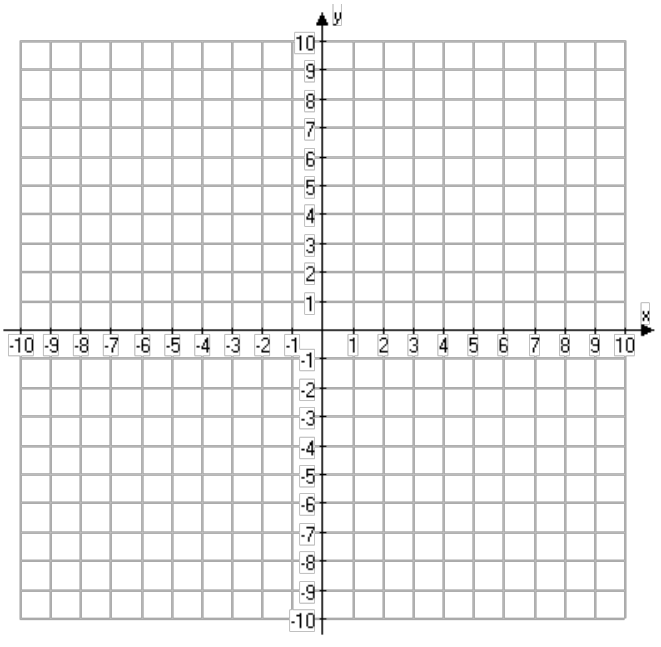
d. $x = -2$

y-int = 0

$x = -2$

e. $7x + 3y = 21$





Ex. 2. Give an example of an equation that has:

a. no x-intercept

$y = 2$ $y = 7$

$y = -6$ $y = 6$ $y = -7$

b. no y-intercept

$x = -2$ $x = 8$ $x = 16$ $x = 2000$

$x = 10520$

Homework:

x and y-intercept Homework Sheet

Pg. 1: #1-4, 7, 10, 12, 13

Pg. 2-3: All

3. $0 = 2x + 7 \quad /\!- 7$

$\frac{-7}{2} = \frac{2x}{2}$

$-3.5 = x$