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Intercepts

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Objective

The student will be able to:

find the x- and y-intercepts of linear equations.

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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?

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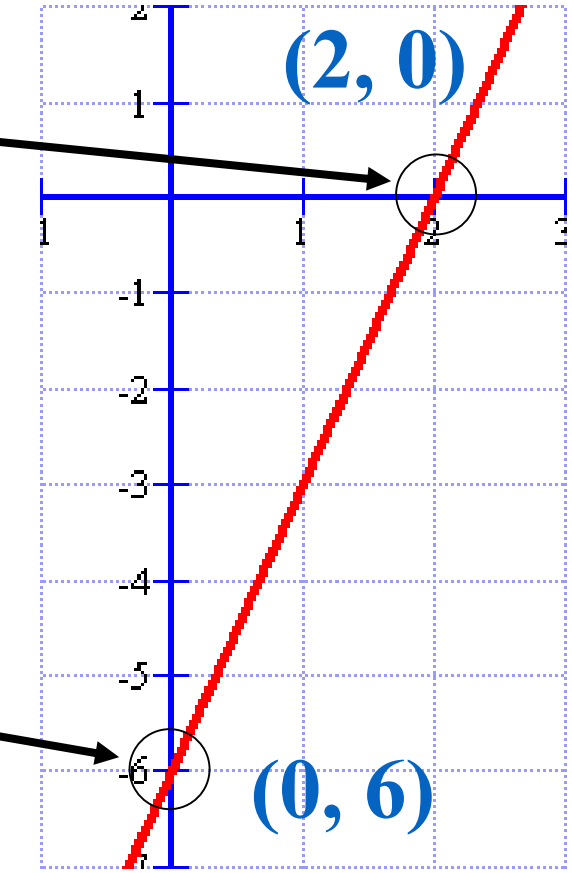
What are the x- and y-intercepts?

The **x-intercept** is where the graph crosses the x-axis.

The y-coordinate is always 0.

The **y-intercept** is where the graph crosses the y-axis.

The x-coordinate is always 0.



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Find the x- and y-intercepts.

1. $x - 2y = 12$

x-intercept: Plug in **0** for y.

$x - 2(\mathbf{0}) = 12$

$x = 12$; **(12, 0)**

y-intercept: Plug in **0** for x.

$\mathbf{0} - 2y = 12$

$y = -6$; **(0, -6)**

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Find the x- and y-intercepts.

2. $-3x + 5y = 9$

x-intercept: Plug in **0** for y.

$$-3x - 5(\mathbf{0}) = 9$$

$$-3x = 9$$

$$x = -3; \ \mathbf{(-3, 0)}$$

y-intercept: Plug in **0** for x.

$$-3(\mathbf{0}) + 5y = 9$$

$$5y = 9$$

$$y = \frac{9}{5}; \ \mathbf{(0, \frac{9}{5})}$$

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Find the x- and y-intercepts.

3. $y = 7$ ***Special case***

x-intercept: Plug in **0** for y.

Does **0** = 7?

No! There is no x-intercept. **None**

What type of lines have no x-intercept?

Horizontal!

Remember VUXHOY?

Horizontal lines…y = 7…y-int = **(0, 7)**

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What is the x-intercept of $3x - 4y = 24$?

1. (3, 0)
2. (8, 0) ✓
3. (0, -4)
4. (0, -6)

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What is the y-intercept of $-x + 2y = 8$?

1. (-1, 0)
2. (-8, 0)
3. (0, 2)
4. (0, 4) ✓

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What is the y-intercept of $x = 3$?

1. (3, 0)
2. (-3, 0)
3. (0, 3)
4. None ✓

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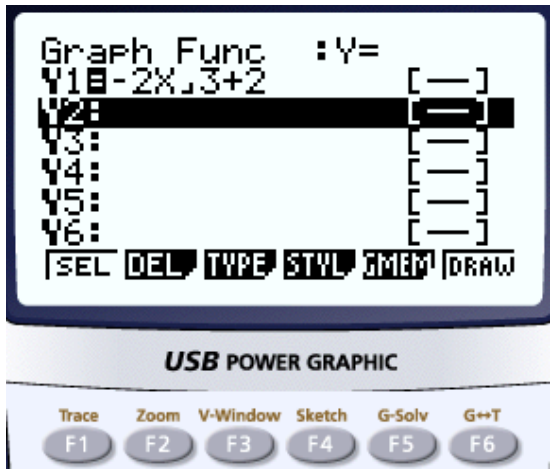
Find the x- and y-intercepts of $2x + 3y = 6$ using the graphing calculator.

Before using the calculator, you must solve the equation for y first.

$$3y = -2x + 6$$

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

Type the equation in the Graph menu and graph it.



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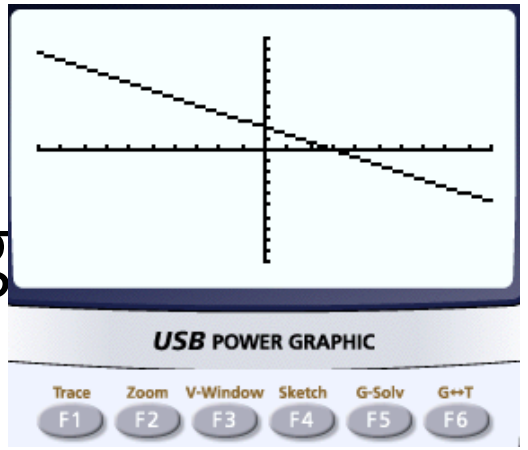
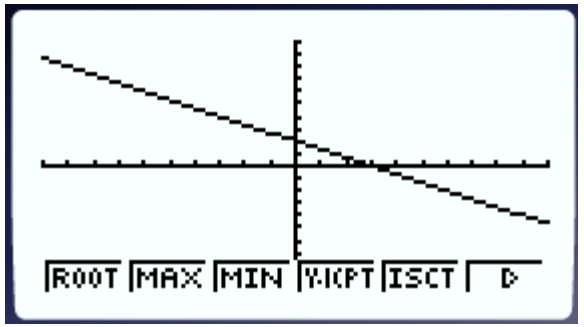
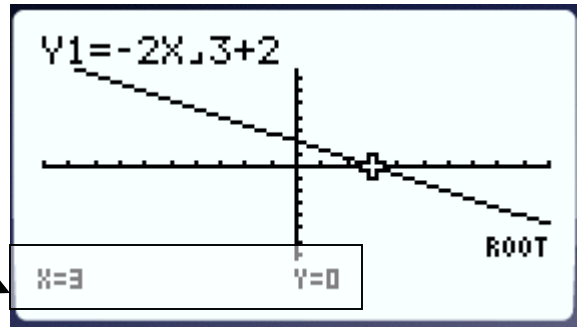
Your graph should look like this. It may vary depending on your window size.



Press F5 (G-Solv) and select F1 (Root) to determine the x-intercept.



The x-intercept is (3, 0)



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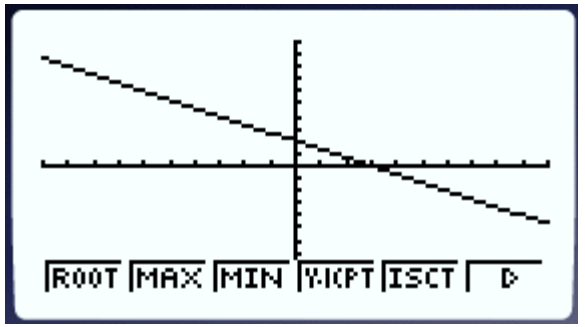
Now find the y-intercept!



Press F4 (Y-ICPT) for the y-intercept.

y-intercept = (0, 2)