

4.3

Algebra 2
Intercepts

x-intercept - the point where the graph crosses the x-axis.

y-intercept - the point where the graph crosses the y-axis.

Finding an x-intercept: substitute 0 in for y and solve for the variable x. Your point should be the ordered pair (x,0).

Finding an y-intercept: substitute 0 in for x and solve for the variable y. Your point should be the ordered pair (0,y).

Find the x & y-intercepts.

ex) $2x + 3y = 12$

$$\begin{aligned} \cancel{2x} + \frac{3y}{3} &= \frac{12}{3} \\ y &= 4 \end{aligned}$$

$$x = \underline{6} \quad (6, 0)$$

$$y = \underline{4} \quad (0, 4)$$

$$\begin{aligned} 2x + \cancel{3y} &= 12 \\ \frac{2x}{2} &= \frac{12}{2} \quad x = 6 \end{aligned}$$

Find the x & y-intercepts.

$$\text{EX 2) } y = 4x^2 - 6x + 8$$

$$y = 4 \cdot 0^2 - 6 \cdot 0 + 8$$

$$y = 8$$

$$x = \frac{3 \pm i\sqrt{23}}{4} \quad (\quad , 0)$$

$$y = 8 \quad (0 , 8)$$

$$0 = 4x^2 - 6x + 8$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{6 \pm \sqrt{36 - 4(4)(8)}}{2 \cdot 4}$$

$$\frac{6 \pm \sqrt{36 - 128}}{8} = \frac{6 \pm \sqrt{-92}}{8}$$

$$\frac{6 \pm i\sqrt{92}}{8} \quad 4 \cdot 23$$

$$\frac{6 \pm 2i\sqrt{23}}{8}$$

$$x = \frac{3 \pm i\sqrt{23}}{4}$$

Try this:

Find the x & y-intercepts. Write your answer as an ordered pair.

1) $4x - 2y = 10$

$$4 \cdot 0 - 2y = 10$$

$$y = -5 \quad (0, -5)$$

$$\frac{4x}{4} - \frac{2 \cdot 0}{4} = \frac{10}{4}$$

$$x = \frac{10}{4}$$

$$x = \frac{5}{2} \quad \left(\frac{5}{2}, 0\right)$$

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

$$y = -3(0)^2 - 15$$

$$y = -15 \quad (0, -15)$$

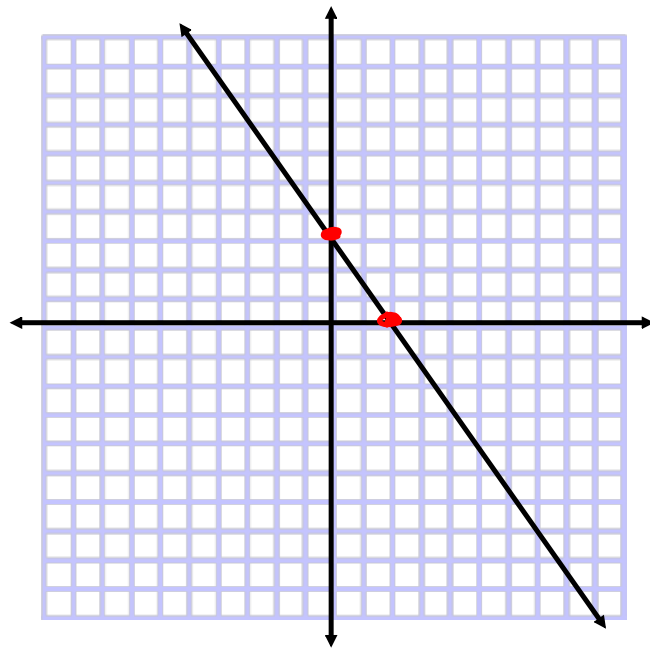
$$0 = -3x^2 - 15$$

$$\frac{15}{-3} = \frac{-3x^2}{-3} \quad (\pm i\sqrt{5}, 0)$$

$$\sqrt{-5} = \sqrt{x^2}$$

$$x = \pm i\sqrt{5}$$

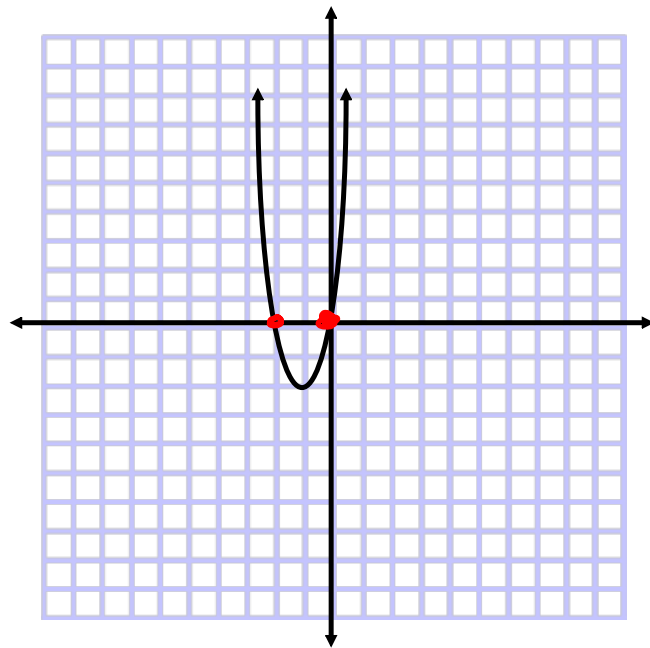
Find the x & y-intercepts given a graph.



$$x = 2$$

$$y = 3$$

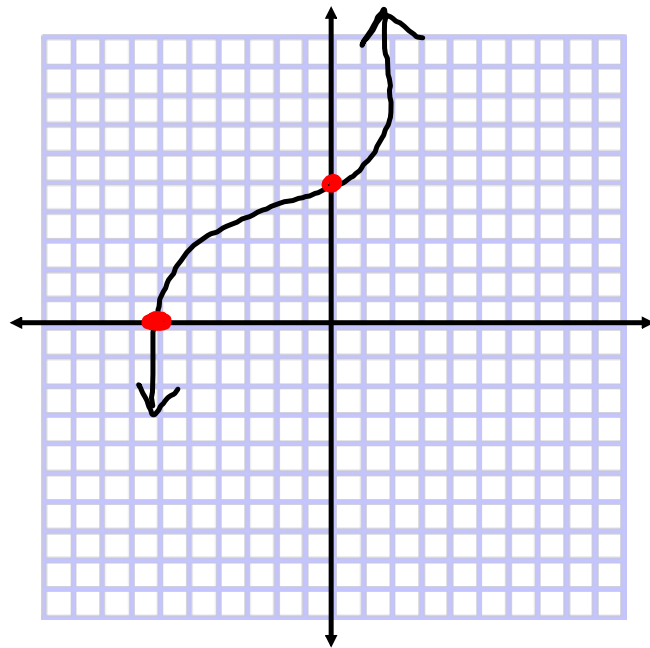
Find the x & y-intercepts given a graph.



$$x = -2, 0$$

$$y = 0$$

Find the x & y-intercepts given a graph.

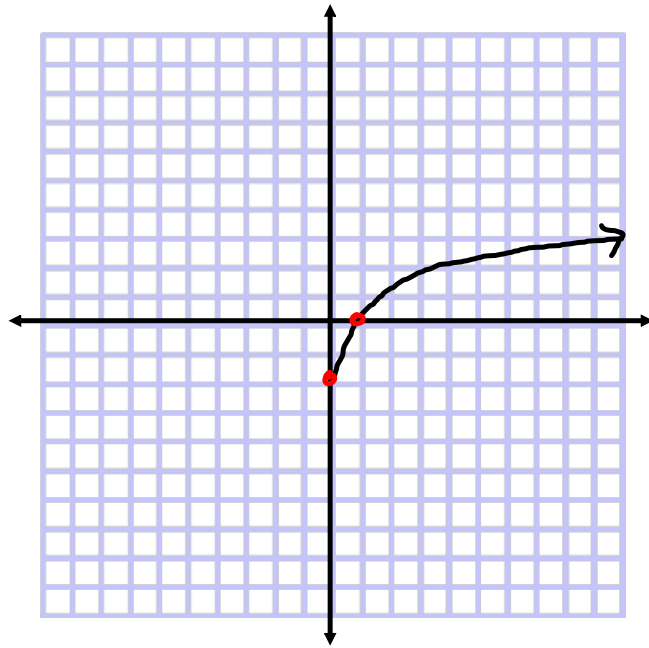


$$x = -6$$

$$y = 5$$

Find the x & y-intercepts given a graph.

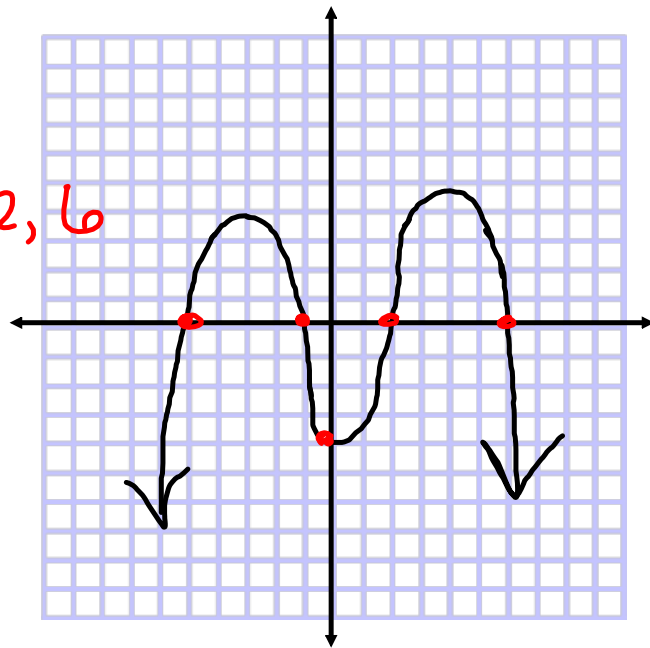
$$x = 1$$
$$y = -2$$



Find the x & y-intercepts given a graph.

$$x = -5, -1, 2, 6$$

$$y = -4$$





Homework:
Worksheet

Algebra 2
4.3 Intercepts

Name: _____ Date: _____ Hr: _____

Find the x & y-intercepts of the graph of the given function. Write your answers as an ordered pair.

1) $3x + 2y = 6$

2) $-3x + 5y = -15$

3) $y = 2x^2 + 3x - 9$

4) $f(x) = 3x^2 - 108$

5) $y = -5x^2 + 45$

6) $f(x) = -x^2 + 2x + 3$

Find the x & y-intercepts given the graph of the function. Write your answer as an ordered pair.

