Monday 11/2/19

1. HW

2. Intercepts by Hand & Graphing Notes/Practice

Topic: Finding Intercepts **Name:** ________________

What am I learning today?

____

____

Warm-Up

M | A
-24 | 10
6, -4 | 2
-6, 4 | -2
(12, -2) | 10

Solve the following equations:

1. $3x - 7 = 0$

+7 +7

$3x = 7$

$\frac{3x}{3} = \frac{7}{3}$

$x = \frac{7}{3}$

2. $3x^2 + 10x - 8 = 0$

$(3x^2 + 12x)(-2x - 8) = 0$

$3x(x+4) - 2(x+4) = 0$

$(3x-2)(x+4) = 0$

$3x - 2 = 0$ $x + 4 = 0$

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

3. $x^2 - 81 = 0$

$(x+9)(x-9) = 0$

$x + 9 = 0$ $x - 9 = 0$

$x = -9$ $x = 9$

Evaluate the following:

1. If $f(x) = x^2 + 3x - 7$, find $f(0)$.

$f(0) = (0)^2 + 3(0) - 7$

$= -7$

2. If $f(x) = -2x - 5$, find $f(0)$.

$= -2(0) - 5 = -5$

Vocabulary

X-Intercept (Graphically)

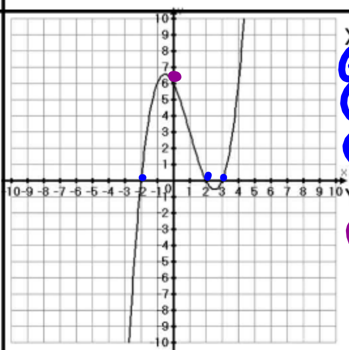
Y-Intercept (Graphically)

GRAPHICALLY

X-Intercept: where the graph crosses the x -axis (can occur in multiple spots). → (x, 0) → y = 0

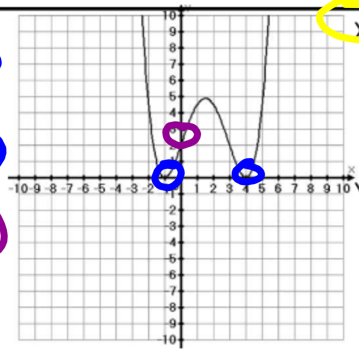
Y-Intercept: where the graph crosses the y -axis (only occurs in one place). → (0, y) → x = 0

Examples



X-Int: (-2,0) (2,0) (3,0)

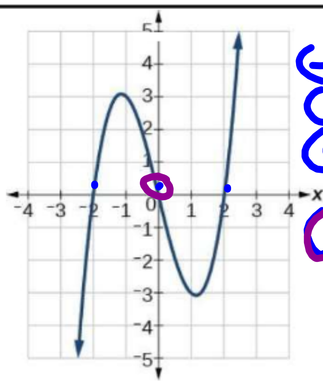
Y-Int: (0,6)



X-Int: (-1,0) (4,0)

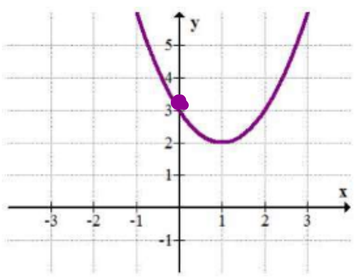
Y-Int: (0,2)

You Try



X-Int: (-2,0) (2,0) (0,0)

Y-Int: (0,0)



X-Int: none NA

Y-Int: (0,3)

Topic: Finding Intercepts **Date:** _____

Vocabulary

X-Intercept (Algebraically)

Y-Intercept (Algebraically)

ALGEBRAICALLY

X-Intercept: because it occurs where the graph crosses the x-axis, that means y=__0__, so, to find the x-intercept algebraically, substitute "__0__" in for __y__, then solve.

a. If linear, solve the linear equation.
b. If quadratic, solve either by factoring or quadratic formula.
c. If cubic, solve by factoring by grouping.

Y-Intercept: because it occurs where the graph crosses the y-axis, that means x=__0__, so, to find the y-intercept algebraically, substitute "__0__" in for __x__, then evaluate.

Examples

Find the x- and y-intercepts of the functions:

1. $f(x) = 3x + 7$

X-Int: $y=0$

$0 = 3x+7$

$-7 \quad -7$

$-7 = 3x$

$\frac{-7}{3} = \frac{3x}{3}$

$x = -\frac{7}{3}$

$(-\frac{7}{3}, 0)$

Y-Int: $x=0$

$y = 3(0)+7$

$= 7$

$(0,7)$

2. $f(x) = x^2 + 7x + 10$

X-Int: $y=0$

$0 = x^2+7x+10$

$0 = (x+5)(x+2)$

$x+5=0 \quad x+2=0$

$x=-5 \quad x=-2$

$(-5,0) \quad (-2,0)$

Y-Int: $x=0$ $(0,10)$

$y=10$

3. $f(x) = 9x^2 - 16$

X-Int: $0 = 9x^2-16$

$0 = (\quad)(\quad)$

Y-Int: $x=0$

You Try

Find the x- and y-intercepts of the functions:

1. $f(x) = 3x^2 + 17x + 10$

X-Int: $0 = 3x^2+17x+10$

Y-Int: $x=0$

$y=$

2. $f(x) = 6x^3 + 4x^2 + 18x + 12$

X-Int: $0 = (6x^3+4x^2)+(18x+12)$

$2x^2(3x+2)+6(3x+2)$

$(2x^2+6)(3x+2)=0$

$2x^2+6=0 \quad 3x+2=0$

$2x^2=-6 \quad 3x=-2$

$x^2=-3 \quad x=-\frac{2}{3}$

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

Y-Int: $x=0$

$y=12 \quad (0,12)$

3. $f(x) = 4x - 8$

X-Int: $0 = 4x-8$

Y-Int: $x=0$

$y=$

Summary

Summarize the lesson in your own words