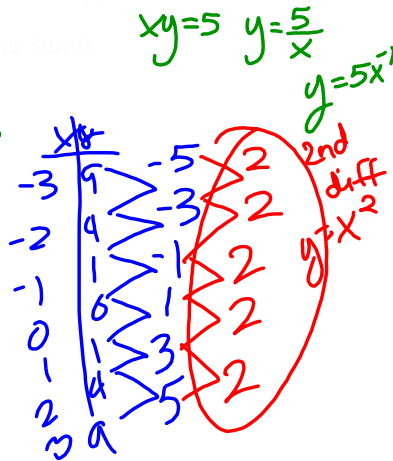
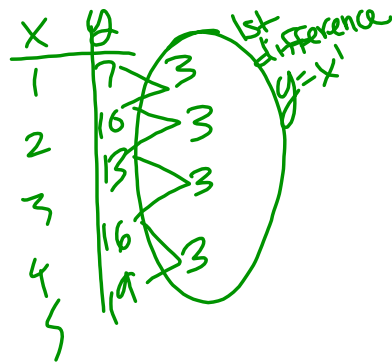


2-2 Linear Equations & Functions

- identify linear equations
- standard form of equations
- x-intercepts and y-intercepts

Linear Equation: No operations other than addition, subtraction, multiplication of a variable by a constant. $y = \frac{k}{3} \rightarrow y = \frac{1}{3}x$

E ★
E ★
T ★
C ★



Determine whether the following are linear or not. If not, explain.

Linear	Not Linear
$y = 2x + 5$ $h(x) = \frac{3}{4}x$ $f(x) = 4 + 7x$ $x = 7$ $2x - 3y - 5 = 0$	$3x^2 = y - 2$ $x + xy = 1$ $f(x) = \frac{5}{x+2}$
$y = -4$ $0x' + y' = -4$ $y = x$	

Standard Form of a Linear Equation:

- must be positive.
- must be a whole number

$$Ax + By = C$$

must be a whole number

- ★ A and B cannot be zero at the same time.
- ★ A, B, and C must be in simplest form. (reduce if you can)

$$5x + 10y = 15 \rightarrow \boxed{x + 2y = 3}$$

Examples: Write the following equations in standard form. Then identify A, B, and C.

$$Ax + By = C$$

1. $y = 3x + 6$

$$\begin{aligned} -3x + y &= 6 & A=3 & B=-1 & C=6 \\ 3x - y &= -6 \end{aligned}$$

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

$$\begin{aligned} -3x - 2y &= -5 & A=3 & B=2 & C=5 \\ \boxed{3x + 2y} &= 5 \end{aligned}$$

3. $\frac{2x - 6y}{2} = \frac{10}{2}$

$$\begin{aligned} x - 3y &= 5 & A=1 & B=-3 & C=5 \\ \boxed{x - 3y} &= 5 \end{aligned}$$

4. $y = 2$ (sf)

$$\begin{aligned} 0x + y &= 2 & A=0 & B=1 & C=2 \end{aligned}$$

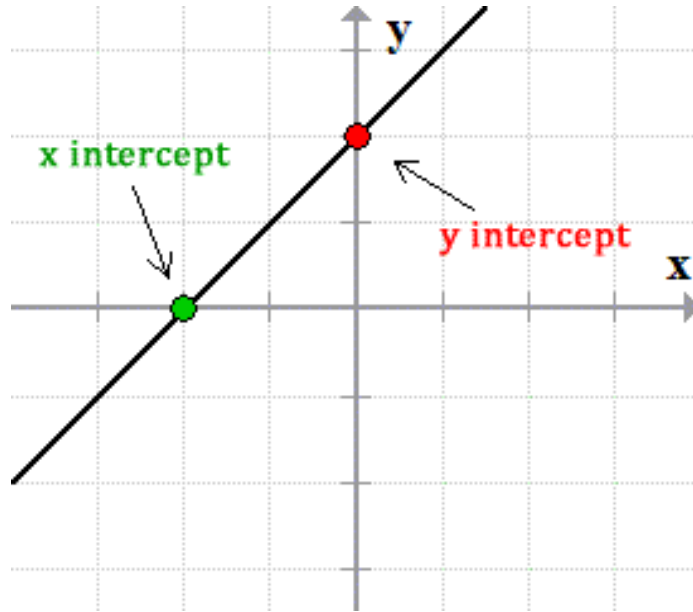
5. $\frac{1}{2}x + 3y = 4$

$$\begin{aligned} x + 6y &= 8 & A=1 & B=6 & C=8 \end{aligned}$$

Intercepts

x-intercept: The point where a graph crosses the x-axis. $(x, 0)$.

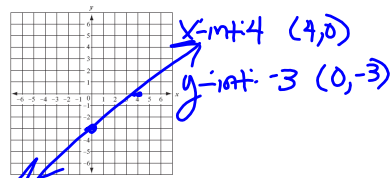
y-intercept: The point where a graph crosses the y-axis. $(0, y)$.



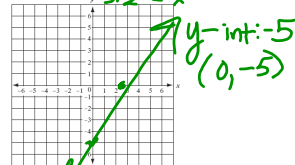
Examples: Find the x and y intercepts for the following equations. Then graph using the intercepts.



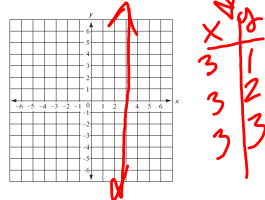
1) $3x - 4y = 12$



2) $y = \frac{5}{2}x - 5$
 $0 = 2x - 5$
 $5 = 2x$
 $\frac{5}{2} = x$

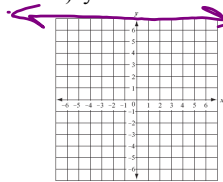


3) $x = 3$



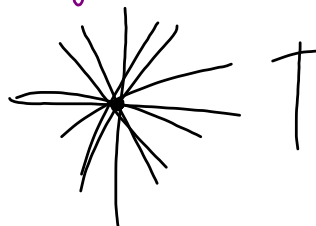
x-int: 3 (3, 0)
y-int: none

4) $y = 7$



x-int: none
y-int: 7 (0, 7)

$0 = 3x$
 $y = 0$
 $x = 0$
 $y = 0$
 x-int: (0, 0)
 y-int: (0, 0)



PAGE 72
16-42 EVENS

