

## Today's Plan:

**Learning Target (standard):** I will graph linear equations using t-charts, slopes and y-intercepts and intercepts.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Write in exponential form.

$$\sqrt[3]{(64x^3 - 8x + 27)}$$
$$(64x^3 - 8x + 27)^{\frac{1}{3}}$$

$$x^{\frac{m}{n}} = \sqrt[n]{x^m}$$

power  
root

Write in radical form.

$$(2x-5)^{\overset{\text{power}}{\textcircled{3}}} \underset{\text{root}}{\sqrt{\quad}} = \sqrt[3]{(2x-5)^3}$$

Simplify.

$$\begin{aligned} \frac{\sqrt{-6}}{\sqrt{-3+\sqrt{2}}} &= \frac{\sqrt{6}i}{\sqrt{3i+2}} \cdot \frac{\sqrt{3i-2}}{\sqrt{3i-2}} \\ &= \frac{\sqrt{6}i(\sqrt{3i-2})}{(\sqrt{3i+2})(\sqrt{3i-2})} \\ &= \frac{\sqrt{18}i^2 - \sqrt{12}i}{3i^2 - 2} \\ &= \frac{-3\sqrt{2} - 2\sqrt{3}i}{-5} \\ &= \frac{-3\sqrt{2}}{-5} - \frac{2\sqrt{3}i}{-5} \\ &= \frac{3\sqrt{2}}{5} + \frac{2\sqrt{3}i}{5} \end{aligned}$$

Simplify.

$$\frac{2}{\sqrt[5]{8x^2y^3}} \cdot \frac{\sqrt[5]{2 \cdot 2 \cdot x \cdot x \cdot x \cdot y \cdot y}}{\sqrt[5]{2 \cdot 2 \cdot x \cdot x \cdot x \cdot y \cdot y}} = \frac{2\sqrt[5]{4x^3y^2}}{2xy}$$

$$= \frac{\sqrt[5]{4x^3y^2}}{xy}$$

(Note: In the original image, red arrows indicate that the 8 in the denominator is  $2^3$  and the 2 in the numerator is  $2^1$ , and the 2s in the denominator of the second fraction cancel out.)

Simplify.

$$\sqrt{-5}\sqrt{-8} = \sqrt{5}i\sqrt{8}i$$

$$= \sqrt{40}i^2 = \sqrt{2 \cdot 2 \cdot 2 \cdot 5}(-1)$$

$$= -2\sqrt{10}$$

(Note: In the original image, a blue circle highlights the  $2 \cdot 2 \cdot 2 \cdot 5$  part of the square root, and red arrows show the prime factorization of 40 as  $2^3 \cdot 5$ .)

Simplify.

$$\frac{2x}{\sqrt[4]{2x}} \cdot \frac{\sqrt[4]{2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x}}{\sqrt[4]{2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x}}$$
$$= \frac{\cancel{2x} \sqrt[4]{8x^3}}{\cancel{2x}} = \sqrt[4]{8x^3}$$

Graph each point:

$A(2, 3)$

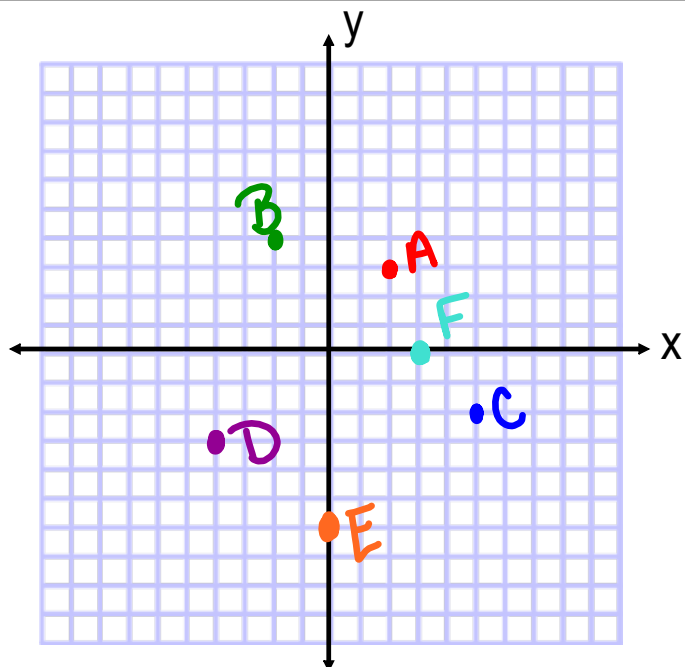
$B(-2, 4)$

$C(5, -2)$

$D(-4, -3)$

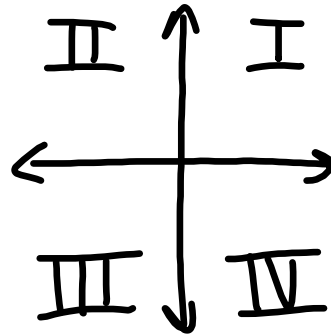
$E(0, -6)$

$F(3, 0)$



## Graph Properties:

- the x-axis (abscissa) is horizontal
- the y-axis (ordinate) is vertical
- an ordered pair consists of the x-coordinate and the y-coordinate  $(x, y)$
- the Cartesian (coordinate) plane is divided into 4 quadrants



## Linear Equations:

- linear equations are first degree equations
- the graphs always result in the graph of a line

↖ ↘ • oblique lines  $y = mx + b$  "Slope-intercept"

• horizontal lines  $y = \#$  ↔

• vertical lines  $x = \#$  ↕

## Linear Equations:

### Methods of Graphing:

- $t$ -chart
- slope-intercept
- intercepts

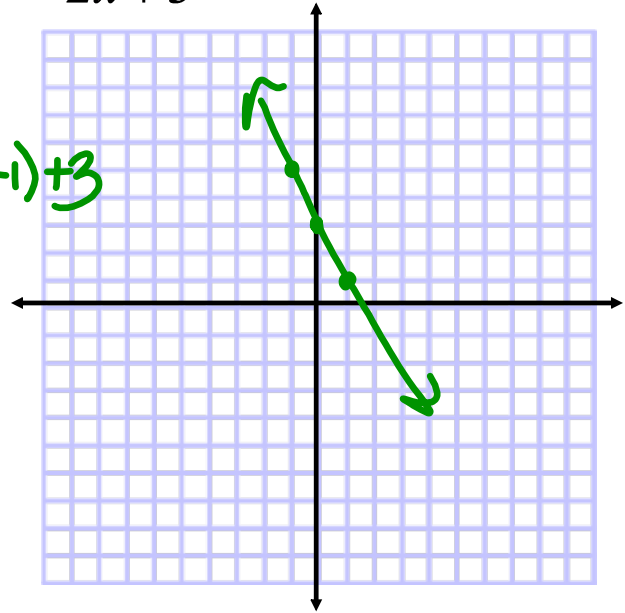
## $t$ -chart Method:

- equation should be in slope-intercept form  $y = mx + b$
- pick 3  $x$ -values - one negative, 0, and one positive value
- substitute the  $x$ -value into the equation and solve for the  $y$ -value
- the  $x$ -values in the chart should be in numerical order
- if the coefficient on the  $x$ -term is a fraction, choose values that are multiples of the denominator so fractions will not need to be graphed

Graph using a *t*-chart:  $y = -2x + 3$ 

X	Y
-1	5
0	3
1	1

$$y = -2(-1) + 3$$

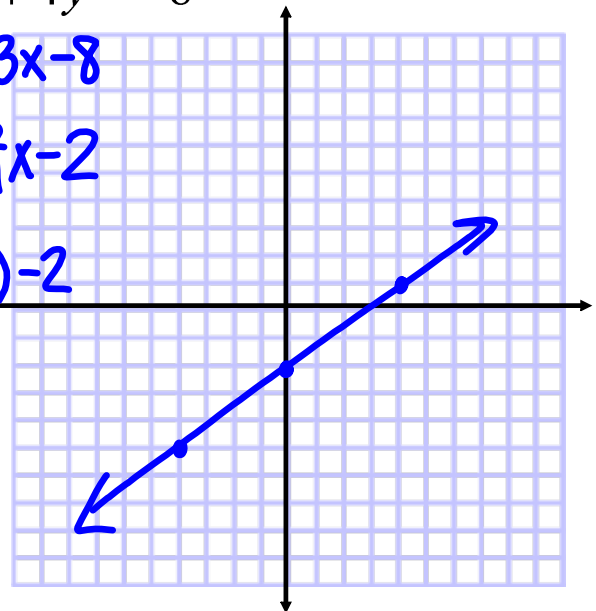
Graph using a *t*-chart:  $-3x + 4y = -8$ 

X	Y
-4	-5
0	-2
4	1

$$4y = 3x - 8$$

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

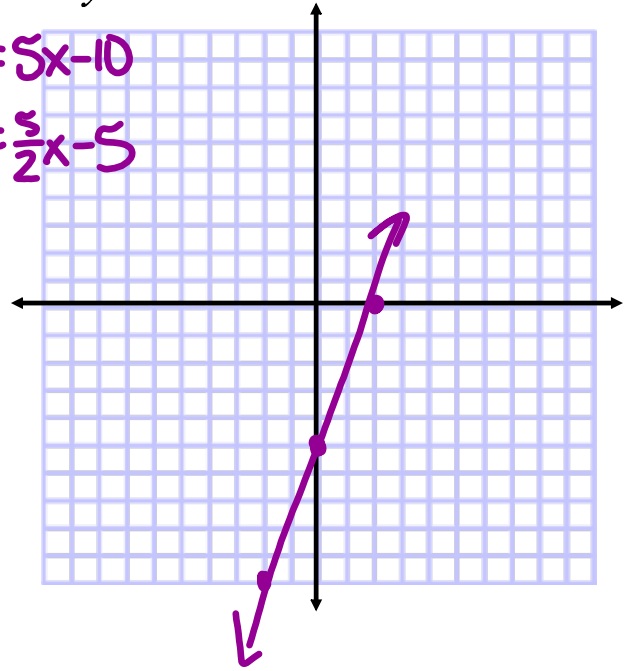
$$y = \frac{3}{4}(-4) - 2$$



Graph using a *t*-chart:  $-5x + 2y = -10$

X	Y
-2	-10
0	-5
2	0

$$2y = 5x - 10$$
$$y = \frac{5}{2}x - 5$$



Assignment:

p.272 #24-38 even

\* Graph using a t-chart \*