

Hey, Let's have a great week !!!



This week:

Monday: Worksheet for Classwork & Homework

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Tuesday: Quiz then a Homework worksheet to pre-view your knowledge

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Wednesday: Piecewise Function Notes & Worksheet for classwork / homework

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Thursday: Piecewise Functions Worksheet Review & Practice

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Friday: Activity Day with Take Home Quiz

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# Linear Functions:



2 minutes -- Share what you know with someone near you



$y = mx + b$  slope-intercept form

↑ Slope =  $\frac{\text{Rise}}{\text{Run}}$       y-int (0, )



Straight Line

Vertical Line Test

$y - y_1 = m(x - x_1)$  point slope formula

↑ don't change

$Ax + By = C$

standard form

ex:  $3x + 2y = 7$

\* use x-int.  
y-int.

State the domain and range of each relation. Then state whether the relation is a function.

Domain: x-values      horizontal axis  $\longleftrightarrow$   
Range: y-values      vertical axis  $\updownarrow$

A Function: can repeat y-values  
 can not repeat x-values

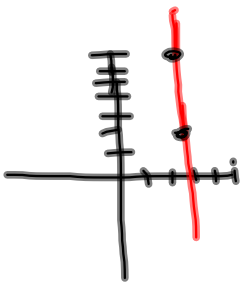
↑  
 Vertical line test

\* only touches graph @ one intersection pt.

Example:

① Equation  $y = |x+2| - 3$  YES

② graph 



③ table

$\left\{ (3, 2), (5, 1), (3, 7) \right\}$

Not A Function

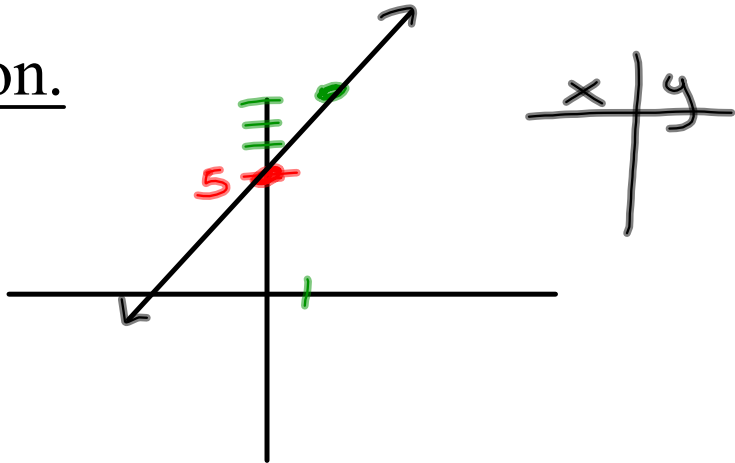
$\left\{ (5, 1), (6, 2), (3, 2), (7, 1) \right\}$   
 Repeat y-values  
 Make a function

Find the domain and range of each graph and then determine if it is a function.

Graph each equation.

$$y = \boxed{3}x + 5$$

$m$   $x$   $+$   $b$   
 $3$   $\uparrow$  "b"  $\rightarrow$  begin  
 $1$   $\rightarrow$



$$2x - 3y = 5$$

① slope-int-form

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

$$y = \frac{2}{3}x - \frac{5}{3}$$

↪ EAST WAY

$$2x - 3y = 5$$

↑  
0

$$2x = 5$$

$$x = \frac{5}{2}$$

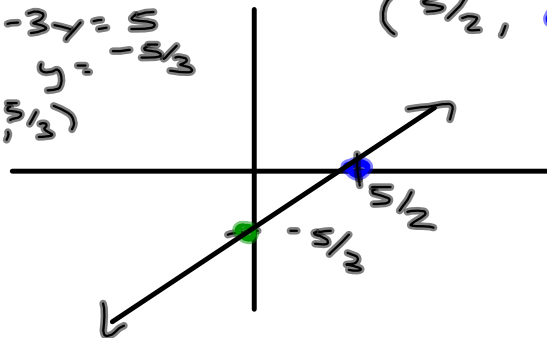
$$\left(\frac{5}{2}, 0\right)$$

$$2x - 3y = 5$$

$$-3y = 5$$

$$y = -\frac{5}{3}$$

$$\left(0, -\frac{5}{3}\right)$$



Write an equation in ~~standard form~~ for a line that passes through the points.

y-int form  
 $y = mx + b$

Write the equation of a line passing through the given points.

① (3, 2) and (5, 1)  
SAME 1st Step

Find the slope  

$$\frac{(3, 2) - (5, 1)}{-2 \quad 1}$$

$$= \frac{1}{-2} = \text{slope } \frac{y}{x} = \left(-\frac{1}{2}\right)$$

$y = mx + b$  (3, 2)

$y = -\frac{1}{2}x + b$   $x = 3$   
 $y = 2$

$\uparrow$   
2

$\uparrow$   
3

$2 = -\frac{1}{2}(3) + b$

$2 = -\frac{3}{2} + b$

$+3\frac{1}{2} \quad +3\frac{1}{2}$

$\frac{2}{1} + \frac{3}{2} = b$

$\frac{4}{2} + \frac{3}{2} = b$

$\frac{7}{2} = b$

\*  $y = -\frac{1}{2}x + \frac{7}{2}$

$y - y_1 = m(x - x_1)$

$y - y_1 = -\frac{1}{2}(x - x_1)$

$y - 2 = -\frac{1}{2}(x - 3)$

$y - 2 = -\frac{1}{2}x + \frac{3}{2}$   
 $+2 \quad +2$

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$y = -\frac{1}{2}x + \frac{3}{2} + \frac{2}{1}$

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

$y = -\frac{1}{2}x + \frac{7}{2}$

parallel  $\Rightarrow$  same slope

perpendicular  $\Rightarrow$  flip & change sign  
"opposite reciprocal"

reciprocal

Determine if the two lines are parallel, perpendicular, coinciding or none of these.



