Hey, Let's have a great week !!! 🌞

**This week:**

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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}}

Straight line
Vertical line test

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

$Ax + By = C$  standard form

ex: $3x + 2y = 7$  use x-int. and y-int.
State the domain and range of each relation. Then state whether the relation is a function.

**Domain:** x-values    **Range:** y-values

A Function: can repeat y-values

Can Not repeat x-values

Vertical line test
* only touches graph at one intersection pt.

**Example:**

1. **Equation**  \( y = (x+2) - 3 \)  
   Yes

2. **Graph**

3. **Table**

   \( (3,2); (5,1); (3,7) \)

   Not a Function

   \( (5,1); (6,2); (3,2); (7,1) \)

   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.

\[ y = \frac{3}{2}x + \frac{5}{3} \]

\[ 2x - 3y = 5 \]

1. **Slope-Intercept Form**
   
   \[ -3y = -2x + 5 \]
   
   \[ y = \frac{2}{3}x - \frac{5}{3} \]

**EASY WAY**

\[ 2x - 3y = 5 \]

- \[ x = \frac{5}{2} \]
  
  \[ (\frac{5}{2}, 0) \]

- \[ y = -\frac{5}{3} \]
  
  \[ (0, -\frac{5}{3}) \]
Write an equation in standard form for a line that passes through the points.

\[ y = -\frac{1}{2}x + b \]

\[ (3, 2) \]

\[ x = 3 \]
\[ y = 2 \]

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

\[ 2 = -\frac{3}{2} + b \]

\[ +\frac{3}{2} \]

\[ \frac{2}{2} + \frac{3}{2} = b \]

\[ \frac{5}{2} = b \]

\[ \frac{7}{2} = b \]

\[ y = \frac{-1}{2}x + \frac{7}{2} \]
parallel \Rightarrow \text{slope same}

perpendicular \Rightarrow \text{flip & change sign}

\text{"opposite reciprocal"}

\text{reciprocal}
Determine if the two lines are parallel, perpendicular, coinciding or none of these.