Graphs & Equations Using y = mx + b

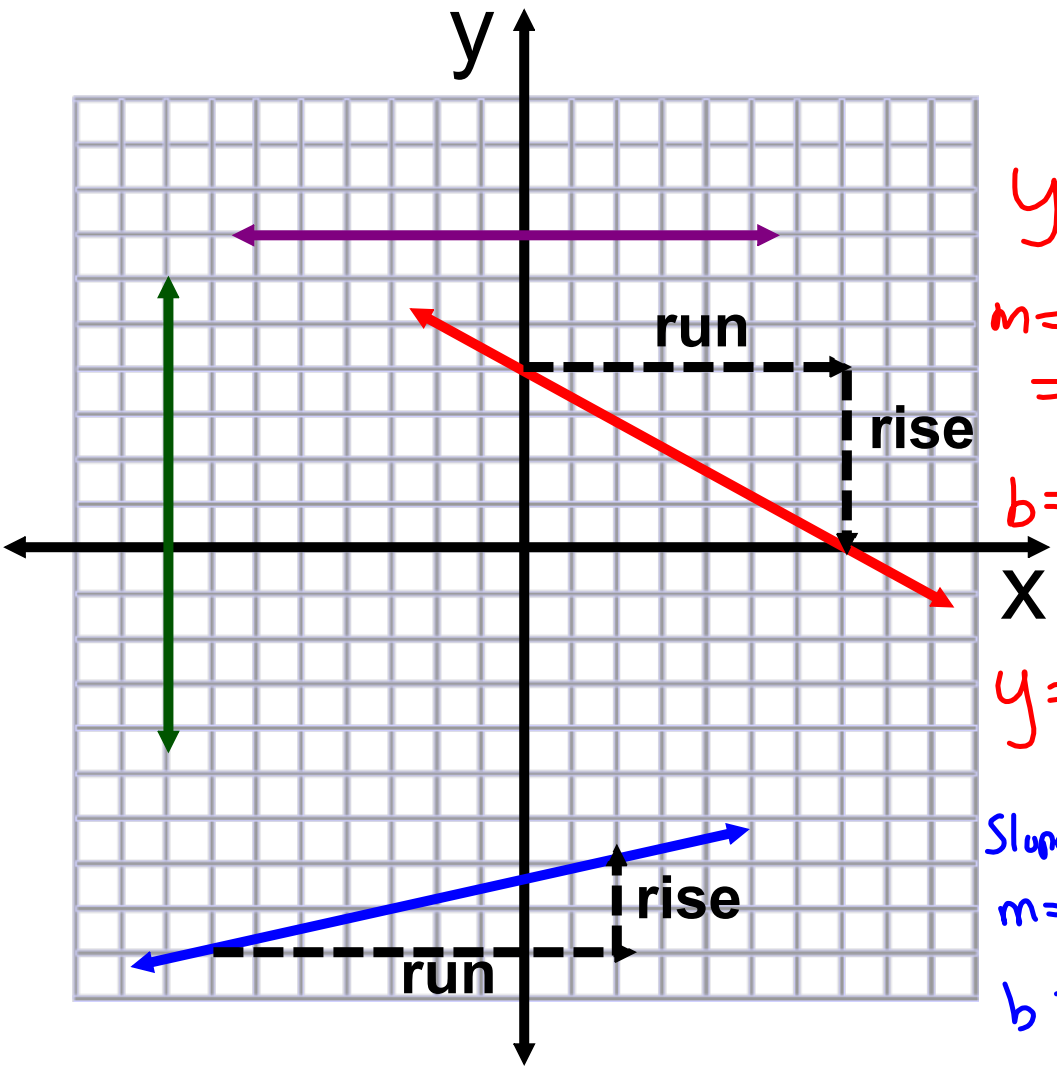
Slope: A measure of the rise or fall of a line. Mathematically it measures how one variable changes with the other, commonly called the *rate of change*.

Slope is calculate by measuring how a line rises or falls while going from left to right.

$$slope = \frac{rise}{run}$$

rise ← number of units moved up or down.

run ← number of units moved to the right.



$y = mx + b$

m = slope

$= \frac{-4}{7}$

b = y-intercept

b = 4

$y = \frac{-4}{7}x + 4$

Slope = m

$m = \frac{rise}{run} = \frac{2}{9}$

$b = -7.5$

$y = \frac{2}{9}x - 7.5$

4.4 Matching Equations and Graphs

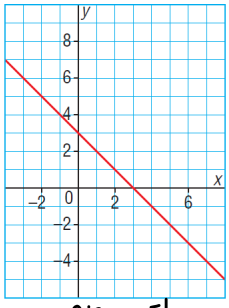
The 3 graphs below have these equations, but the graphs are not in order:

$y = 3x + 3$ y = -1x + 3 $y = 3x - 3$

$y = mx + b$ (m = slope)

** Find the slope and y-intercept of each. **

Graph A

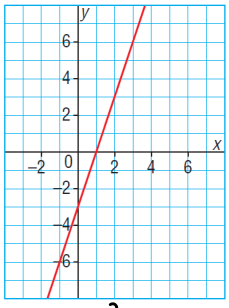


$m = \frac{rise}{run} = \frac{-1}{1} = -1$

b = 3

$y = -1x + 3$

Graph B

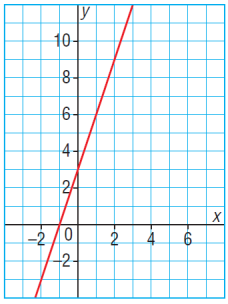


$m = \frac{3}{1} = 3$

b = -3

$y = 3x - 3$

Graph C



$m = \frac{3}{1} = 3$

b = 3

$y = 3x + 3$

On which graph does each of the following points belong:

(3,0) A

(-1,0) C

(2,9) C

(2,3) B

(6,-3) A

(-2,5) A

(1,6) C

(3,6) B

Use the given equations (above) to determine which graph each of the following points belong to:

(10,27) (A)

$y = -1x + 3$

$y = -1(10) + 3$

$= -10 + 3$

$= -7$

(B) ✓

$y = 3x - 3$

$= 3(10) - 3$

$= 30 - 3$

$= 27$

(-5,8) (A) ✓

$y = -1x + 3$

$= -1(-5) + 3$

$= 5 + 3 = 8$

(-6, -15) (C) ✓

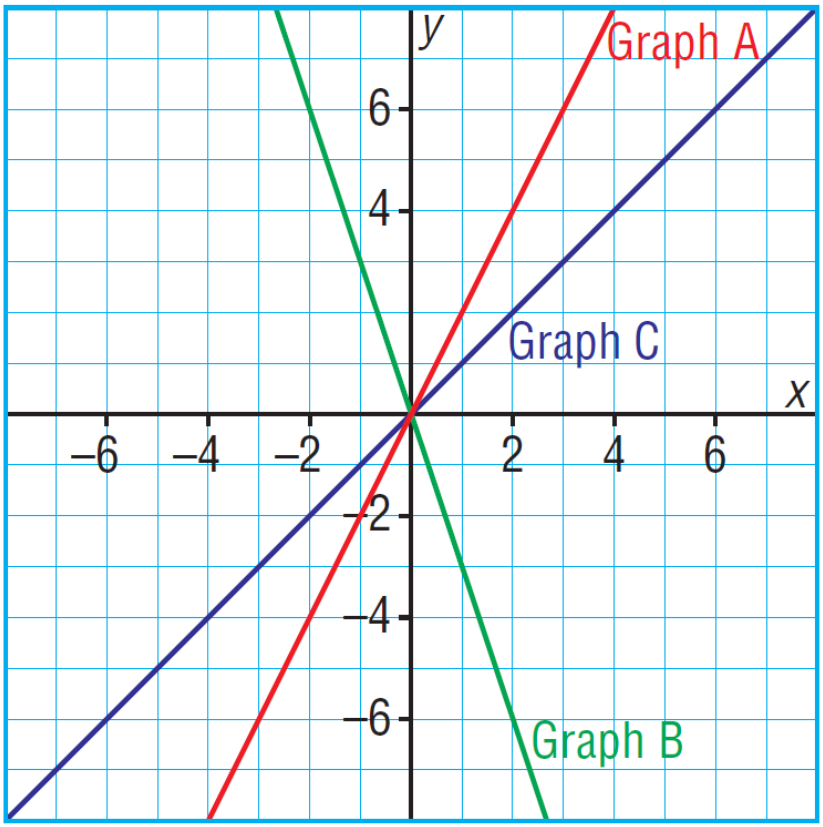
$y = 3x + 3$

$= 3(-6) + 3$

$= -18 + 3$

$= -15$

Match each graph on the grid with its equation below.

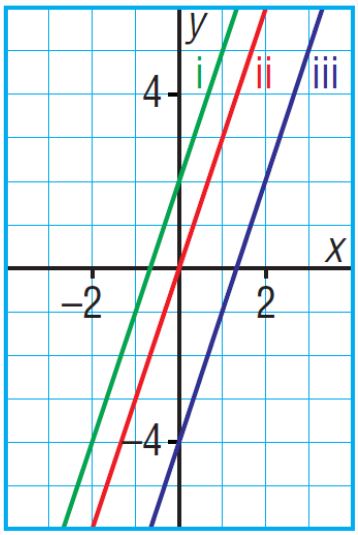


C $y = x$ $\frac{1}{1}$

A $y = 2x$ $\frac{2}{1}$

B $y = -3x$ $\frac{-3}{1}$

Which graph on this grid has the equation $y = 3x - 4$? Justify the answer.



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Math Art Bonus Project: Due Friday March 14.

Chapter 4 Test: Thursday, Feb. 27.