More Lines

Linear Function Facts To Know

Slope $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$

Slope-intercept

$y = mx + b$

(m = slope, b = y-int)

* **Point-Slope** (know 2 points)

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

Find eq. of line

Standard form

$Ax + By = C$

* no fractions
* A must be +

$m = -\frac{A}{B}$

* Find the eq. of a line given:
  - graph
  - 2 points
  - parallel or perp. to another line
* Graph lines
  * by hand
  * by calculator

Parallel

same slopes

Perpendicular

opposite reciprocal slopes

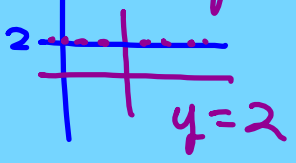
$m = \frac{3}{5}$ $\perp m = -\frac{5}{3}$

$m = -6$ $\perp m = \frac{1}{6}$

Horizontal

$m = 0$

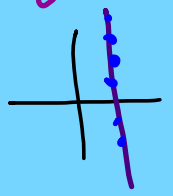
$\frac{0}{7}$ $y = \#$

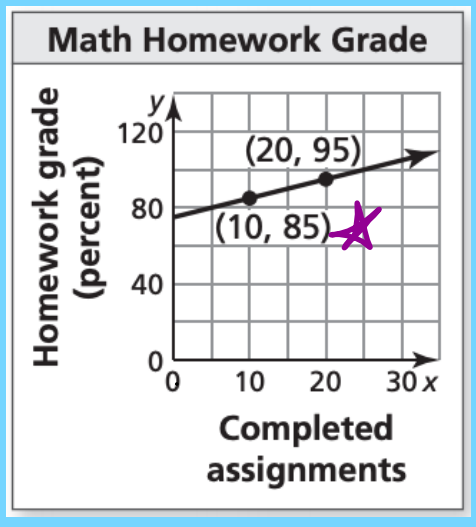


Vertical

m = undef. slope

$\frac{8}{0}$ $x = \#$





Find the equation of the line shown on the graph.

$m = \frac{95-85}{20-10}$

$= \frac{10}{10} = 1$

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

$y - 85 = 1(x - 10)$

$y - 85 = x - 10$

$+85 \quad +85$

$y = x + 75$

SHORTCUT!

Write the eq. of the line which passes through $(-2,8)$ and is perpendicular to the line $2x-3y=7$.

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

$y-8=-\frac{3}{2}(x+2)$

$y-8=-\frac{3}{2}x-3$

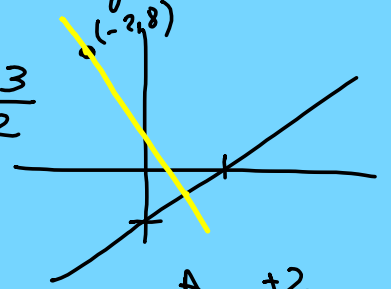
$+8 \quad +8$

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

$\perp m=-\frac{3}{2}$

$(-2,8)$

$-\frac{3}{2}\cdot\frac{2}{3}$



$m=-\frac{A}{B}=\frac{+2}{+3}$

Shortcut!

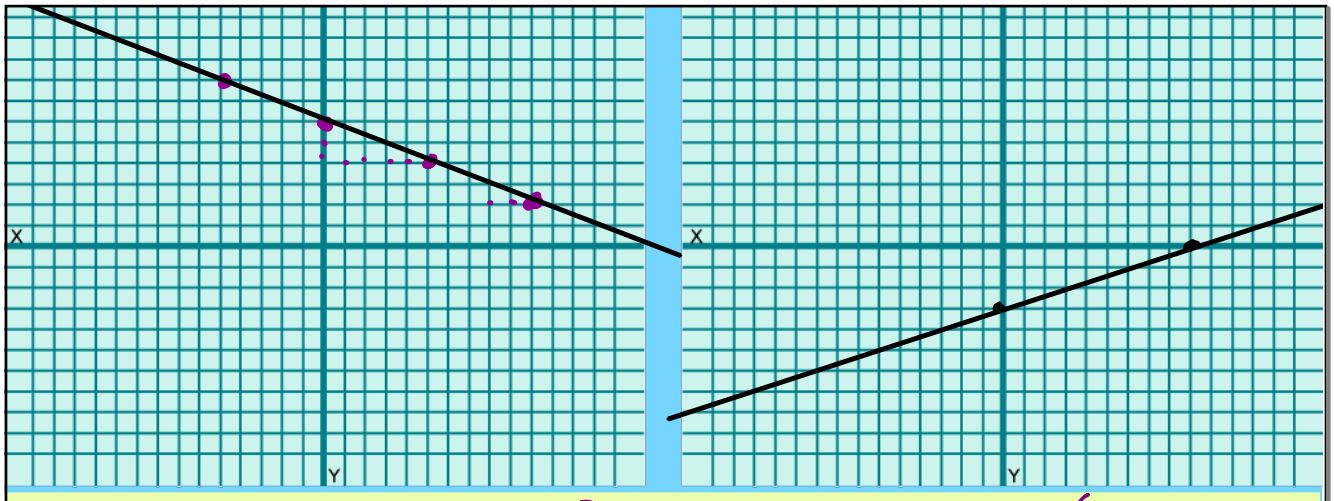
$\frac{7--11}{8-8}=\frac{18}{0}$

$(8,-11)$ $(8,7)$

$x=8$

$(293,-1024)$ $(587,-1024)$

$y=-1024$



Graph $y = -\frac{2}{5}x + 6$ $\frac{-2}{5}$

m y-int $\frac{2}{5}$

$2x - 6y = 18$ { My way or the highway!

x-int: Let $y = 0$

y-int: Let $x = 0$

x	y
9	0
0	-3

How do you graph on a TI-Nspire?

To change graph entry mode to standard form:

Menu -- 3: Graph Entry/Edit 3: Equation Templates 1: Line 3: Standard form

To change back to f(x) entry: Menu -- 3: Graph Entry/Edit 1: Functions