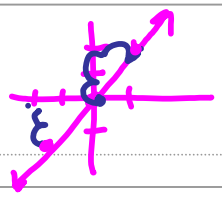
Lines

Note Title 9/2/2011

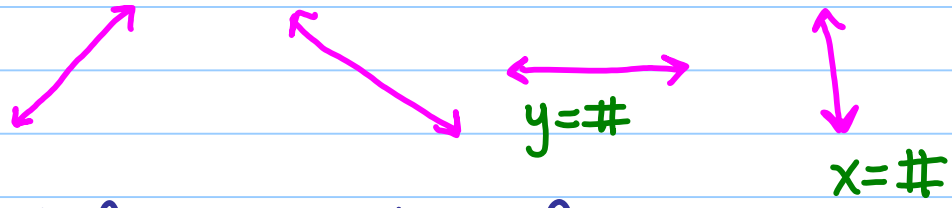


$\frac{3}{1} = 2$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

+ slope − slope 0 undefined

Slope = $\frac{\text{rise}}{\text{run}}$

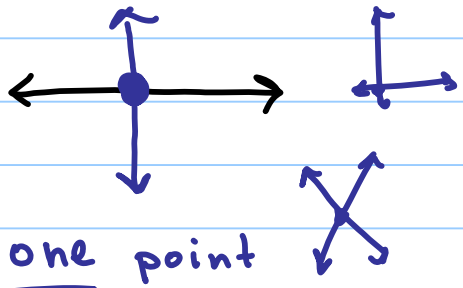


Line contains an infinite number of points. and continue in two directions infinitely.

$y = mx + b$ slope-intercept form

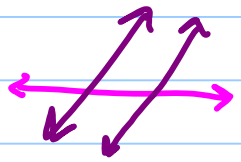
slope — y-intercept (point where line crosses y-axis)

Lines can intersect.



one point

infinite intersections



same slope

never intersect parallel

perpendicular lines

opposite reciprocal slope

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

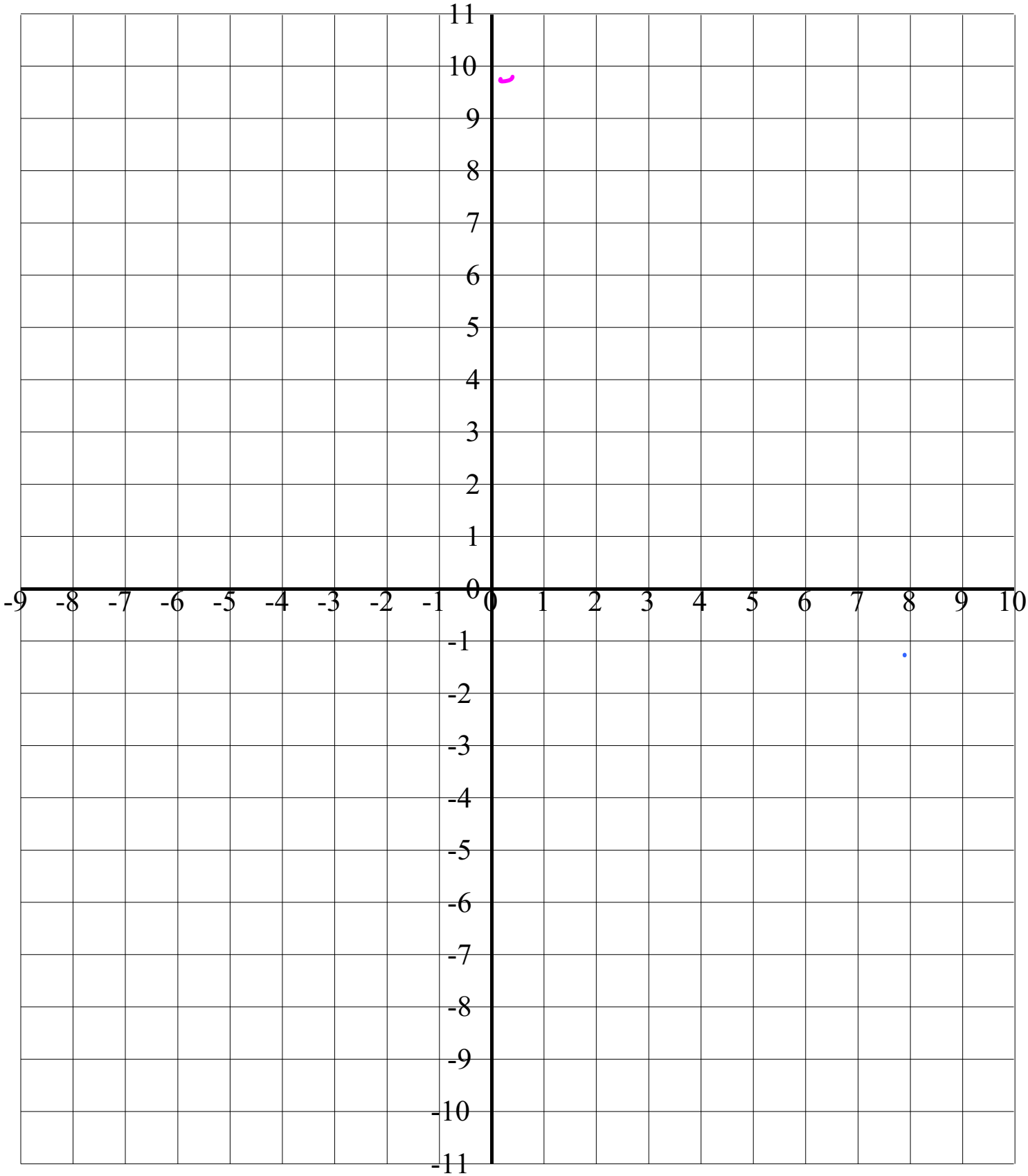
point-slope form of a line

$Ax + By = C$ standard form

- A must be (+)
- no fractions

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

Coordinate Grid Paper



Write the equation of a line.

- passes through $(\overset{x_1}{2}, \overset{y_1}{-5})$ and has a slope of 3.

$y = mx + b$

$-5 = 3(2) + b$

$-5 = 6 + b$

$-6 \quad -6$

$-11 = b$

$y = 3x - 11$

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

$y - -5 = 3(x - 2)$

$y + 5 = 3x - 6$

$-5 \qquad -5$

$y = 3x - 11$

$m = 0$

- passing through $(\overset{x_1}{-1}, \overset{y_1}{3})$ and $(4, 3)$

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

$y - 3 = 0(x + 1)$

$y - 3 = 0$

$y = 3$

passes through $(\overset{x_1}{2}, \overset{y_1}{4})$ parallel to

$y = \boxed{\frac{1}{1}}x - 5$ same slope

$y = mx + b$

$4 = 1(2) + b$

$4 = 2 + b$

$\boxed{2 = b}$

$\boxed{y = 1x + 2}$

Passing through $(3,-4)$ perpendicular to $2x - 3y = 5$

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

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

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

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

$$2y + 8 = -3x + 9$$

$$2y = -3x + 1$$

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