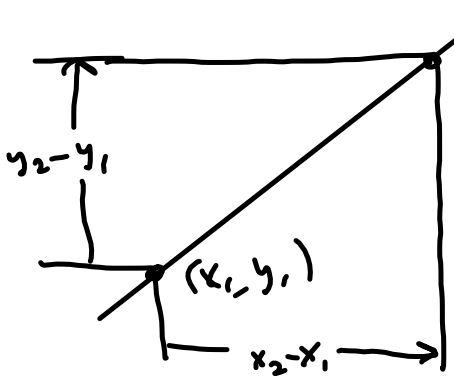
Lines
Slope Between 2 pts
Slope-Intercept Form
Standard/General Form
* Point-Slope Form



$$\text{Slope} = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Ex $(2,3)$, $(-5,-7)$
(x_1, y_1) (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-7-3}{-5-2} = \frac{-10}{-7} = \frac{10}{7}$$

"AN"
Eq'n of the line thru them:

$y = m(x - x_1) + y_1$ Point-Slope Form

$y = \frac{10}{7}(x-2)+3$ or $y = \frac{10}{7}(x+5)-7$

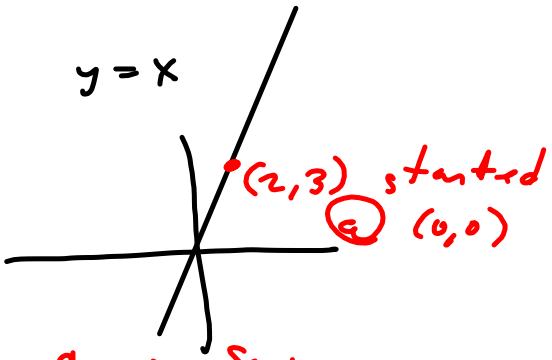
STOP

$y = \frac{10}{7}x$

$y = \frac{10}{7}(x-2)$

$y = \frac{10}{7}(x-2)+3$

$3(x+7)^2 - 11$



Coming Soon

Slope-Intercept form $y = mx+b$

$y = \frac{10}{7}(x-2)+3$

$= \frac{10}{7}x - \frac{20}{7} + \frac{21}{7}$

$\boxed{y = \frac{10}{7}x + \frac{1}{7}}$

Standard form has all coefficients $\in \mathbb{Z}$

$Ax+By=C$, where $A, B, C \in \mathbb{Z}$ are in the integers.

$7y = \frac{7}{1}\cdot\frac{10}{7}x + \frac{7}{1}\cdot\frac{1}{7} \Rightarrow$

$7y = 10x + 1 \Rightarrow$

$\boxed{-10x+7y=1}$

$10x-7y=-1$

Parallel lines have same slope

$m_{\parallel} = m$

Perpendicular lines' slopes are negative reciprocals.

$m_{\perp} = -\frac{1}{m}$.

Parallel to $y = \frac{10}{7}x + \frac{1}{7}$ thru $(\pi, 17)$

$y = \frac{10}{7}(x-\pi)+17$

Perpendicular thru $(17, \pi)$

$y = -\frac{7}{10}(x-17)+\pi$

#51-81 ALL, 9-17 ODD 5

19, 23, 26, 27, 30, 31, 33,
35, 41, 44, 47, 51, 54,
55, 6366, 67, 69, 72,
73, 77, 79, 80, 90, 91

121 S1.4 #1-8 ALL, 9, 10, 13, 15, 17, 19, 22, 23, 25, 27, 30, 35, 38,

40, 43, 45, 47, 57, 59, 66,
67, 69, 70, 71,
73, 76, 80, 85,
86, 104

100. *Perpendicular Tangents* A circle of radius 5 intersects a circle of radius 12 so that the tangent lines at the points of intersection are perpendicular. What is the distance between the centers of the circles?