

BE-1A | MONDAY 2-1-10 ↗

- ① Find EOL through $(-3, -1), (6, -4)$
- ② Solve: $\frac{4x}{3} = \frac{2}{9}$
- ③ WHAT IS THE NAME of the
type of EQUATION in #2?
WHAT PROPERTY do you use to
solve it?
- ④ $16 \div 2 \cdot 5 \cdot 3 \div 6$

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- Homework 4 / Quiz 4
 - EXAM 1 Thursday

WHAT OTHER TYPES OF LINEAR PROBLEMS CAN YOU NOW SOLVE?

EQUATION

Two Points

$(-3, -4), (-2, -8)$

$$\frac{-8+4}{-2+3} = \frac{-4}{1} = -4 = m$$

$$y = mx + b$$

$$-4 = -4(-3) + b$$

$$-4 = 12 + b$$

$$-16 = b$$

$$y = mx + b$$

$$y = -4x - 16$$

EQUATION OF LINE
THROUGH $(-3, -4), (-2, -8)$

One Point & Slope

$(2, -3) \quad m = \frac{1}{2}$

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

$$y = mx + b$$

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

$$-3 = 1 + b$$

$$-4 = b$$

$$y = mx + b$$

$$y = \frac{1}{2}x - 4$$

EQUATION OF LINE
THROUGH $(2, -3)$ WITH
SLOPE OF $\frac{1}{2}$

Slope & Y-intercept

$m = 5 \quad y_{\text{int}} = -2$

$$m = 5$$

$$-2 = b$$

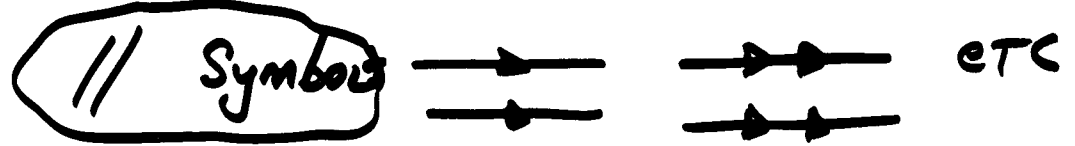
$$y = mx + b$$

$$y = 5x - 2$$

EQUATION OF
LINE WITH
SLOPE 5 AND
Y-intercept of
-2

PARALLEL
LINES

LINES IN THE SAME PLANE
THAT NEVER CROSS.

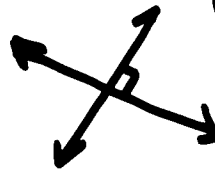
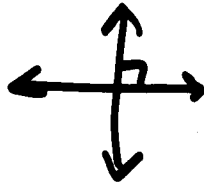


* PARALLEL LINES HAVE THE SAME
SLOPE!

$$\left\{ \begin{array}{l} y = 2x - 6 \parallel \text{to } y = 2x + 4 \\ y = -\frac{1}{2}x + 3 \parallel \text{to } y = -\frac{1}{2}x + 5 \end{array} \right.$$

PERPENDICULAR LINES IN THE SAME PLANE
THAT CROSS AT 90 DEGREES
(A RIGHT ANGLE)

⊥ Symbol



* PERPENDICULAR LINES HAVE SLOPES
THAT ARE NEGATIVE RECIPROCALS
(OPPOSITE SIGNS) (FLIPPED)

$$\left\{ \begin{array}{l} y = 2x - 6 \perp \text{to } y = -\frac{1}{2}x + 4 \\ y = \frac{1}{5}x + 2 \perp \text{to } y = 5x + 6 \end{array} \right.$$

Problems involving $\parallel$ or $\perp$ lines ARE just like the ones we HAVE been doing, with ONE extra step to find the slope you want. This extra step requires you to know that $\parallel$ lines HAVE SAME $m = m_1$, $\perp$ lines HAVE $m, -\frac{1}{m} = m_\perp$

Ch. 5-6 $\parallel$ AND $\perp$ LINES

(EX 1) Find EOL through $(-1, -2)$ that is parallel to $y = -3x - 2$

$(-1, -2)$, want $m = -3$
 x, y

$$y = mx + b$$

$$-2 = -3(-1) + b$$

$$\begin{array}{r} -2 = 3 + b \\ -3 \quad -3 \end{array}$$

$$-5 = b$$

$$y = -3x - 5$$

ⓔx Find EOL through $(-1, -2)$
that is perpendicular to
 $y = -3x - 2$

$$\downarrow$$

$$m_{\perp} = \frac{1}{3} \quad (-1, -2)$$

x, y

$$y = mx + b$$

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

$$-2 = -\frac{1}{3} + b$$

$+\frac{1}{3} \quad +\frac{1}{3}$

$$-\frac{2}{1} + \frac{1}{3} = b$$

$$-\frac{6}{3} + \frac{1}{3} = b$$

$$\left(-\frac{5}{3} = b \right)$$

$$\boxed{y = \frac{1}{3}x - \frac{5}{3}}$$

Homework: Pg. 295 # 6, 7, 9, 10