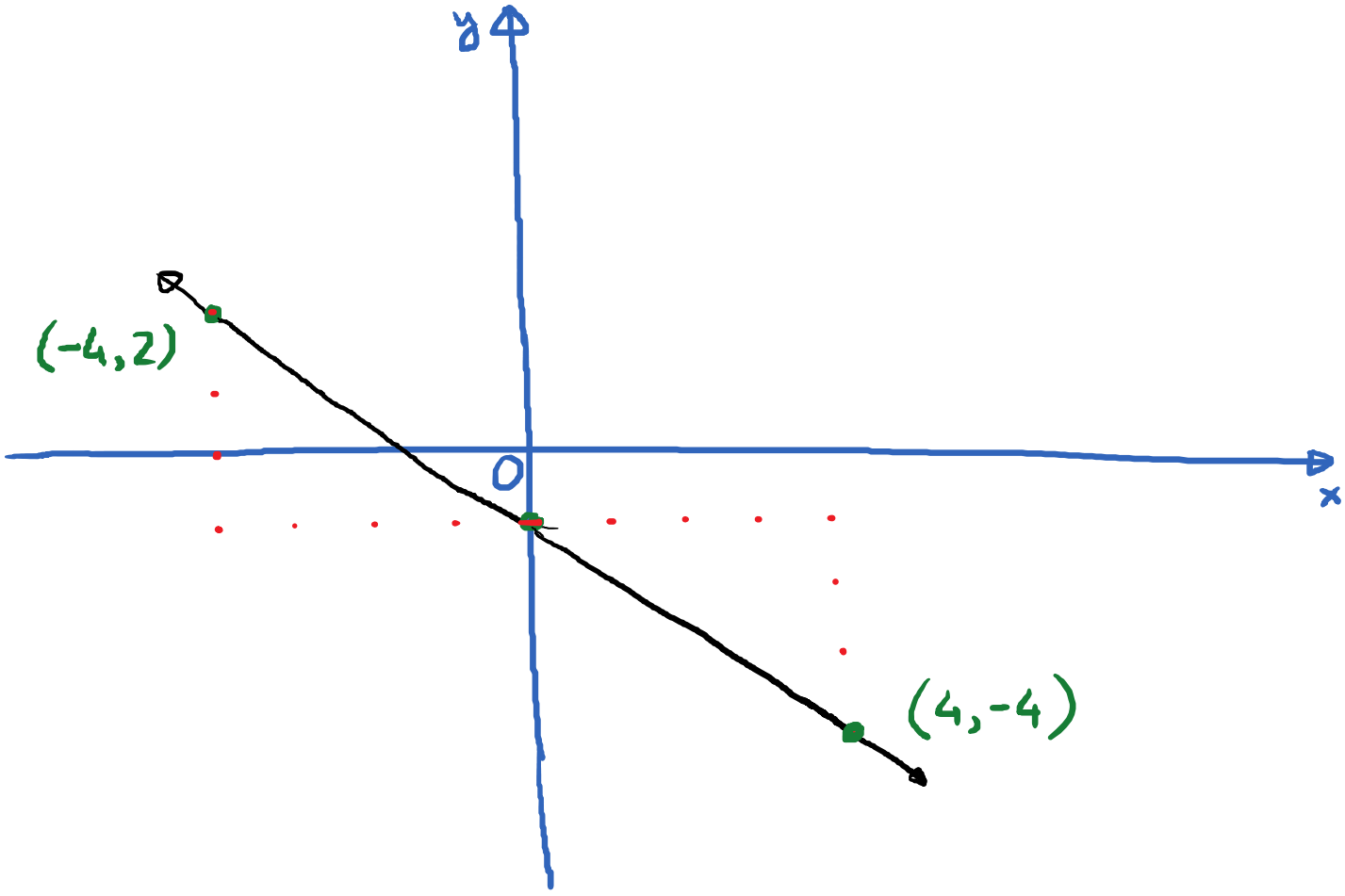
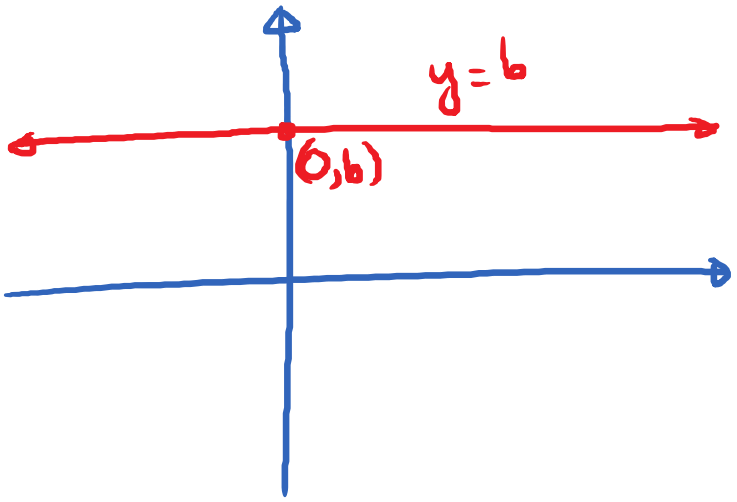
Ex. $f(x) = -\frac{3}{4}x - 1$. Graph using slope and y-intercept.



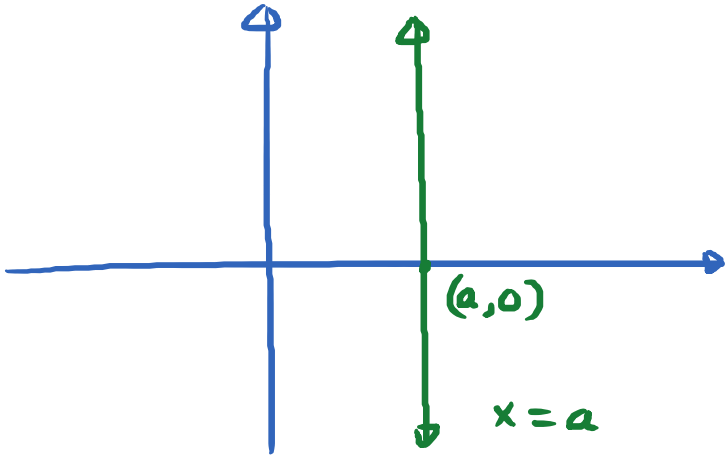
(5) Horizontal Lines and Vertical Lines:

The graph of $y = b$ is a horizontal line with y-intercept $(0, b)$ and Slope $= 0$

The graph of $x = a$ is a vertical line with x-intercept $(a, 0)$ and slope undefined.



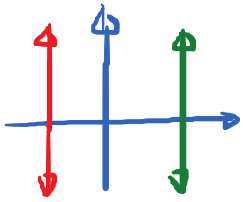
Slope = 0.



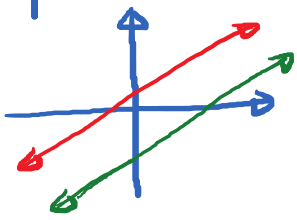
Slope undefined.

(6) Parallel and Perpendicular Lines

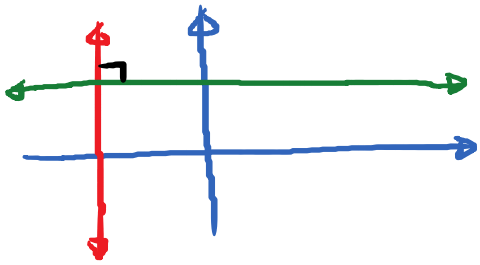
If 2 lines are vertical, then they are parallel.



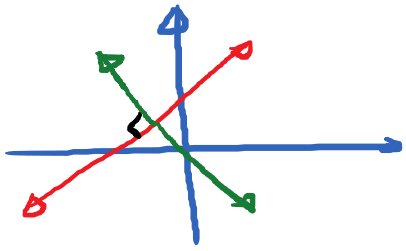
For nonvertical lines, 2 lines are parallel if and only if they have the same slope.



A vertical line and a horizontal line are perpendicular.



For nonvertical and nonhorizontal lines, 2 lines are perpendicular if and only if the product of their slopes is -1. In other words, one slope is the negative reciprocal of the other slope.



E.g. $\underbrace{y = 2x - 5}_{(L_1)}$; $\underbrace{2y - 4x = 3}_{(L_2)}$

Q: Are (L_1) and (L_2) parallel or perpendicular or neither?

(L_1): Slope $= 2$

(L_2): $2y - 4x = 3 \longrightarrow 2y = 4x + 3 \longrightarrow y = 2x + \frac{3}{2}$

Slope $= 2$

Answer: (L_1) and (L_2) are parallel b/c the slopes are equal.

E.g. $\underbrace{5x - 6y = 30}_{(L_1)}$; $\underbrace{5y + 6x = 0}_{(L_2)}$

Q: Parallel ? Perpendicular ? Neither?

(L_1): $-6y = -5x + 30 \longrightarrow y = \boxed{\frac{5}{6}}x - 5$

Slope $= \frac{5}{6}$

(L_2): $5y = -6x \longrightarrow y = \boxed{-\frac{6}{5}}x$

Slope $= -\frac{6}{5}$

(L_1) and (L_2) are perpendicular b/c one slope = neg. recip. of the other.