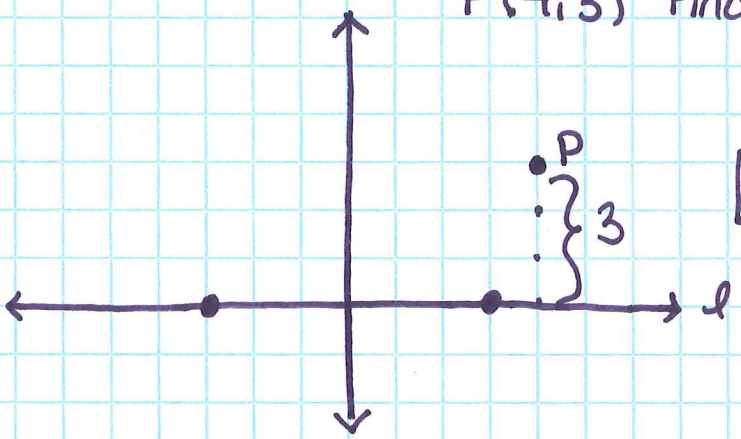
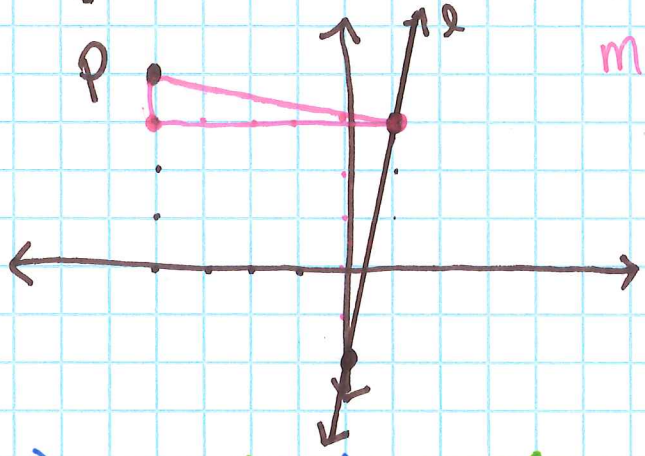
Pg 185 # 8, 9, 11, 13, 16, 20-22, 24, 25 36-43.

8.) ℓ contains points $(-3,0)$ and $(3,0)$ $P(4,3)$ Find the distance from P to ℓ.



$d = 3$ units

9.) ℓ contains points $(0,-2)$ and $(1,3)$ $P(-4,4)$ Find distance from P to ℓ.

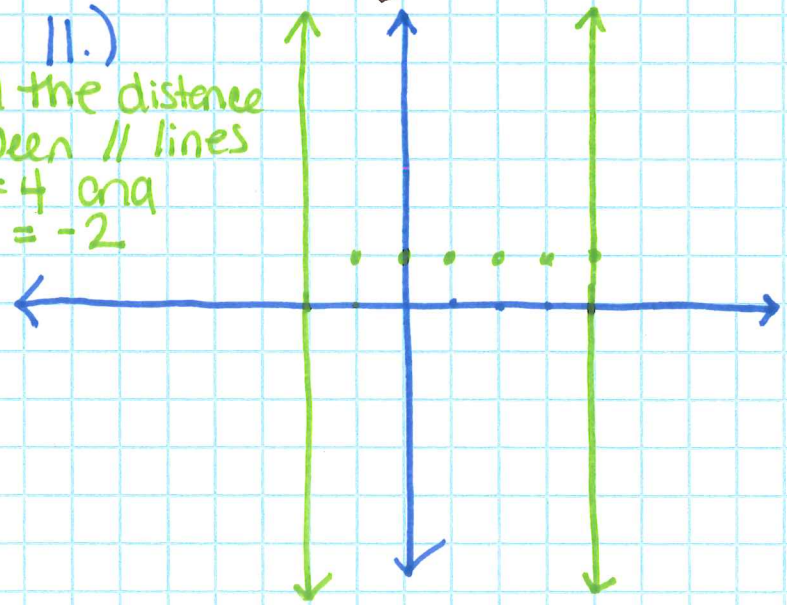


$m = \frac{5}{1} = 5 \quad m_{\perp} = -\frac{1}{5}$

$1^2 + 5^2 = d^2$

$\sqrt{26} = d$

11.) Find the distance between // lines $x = 4$ and $x = -2$

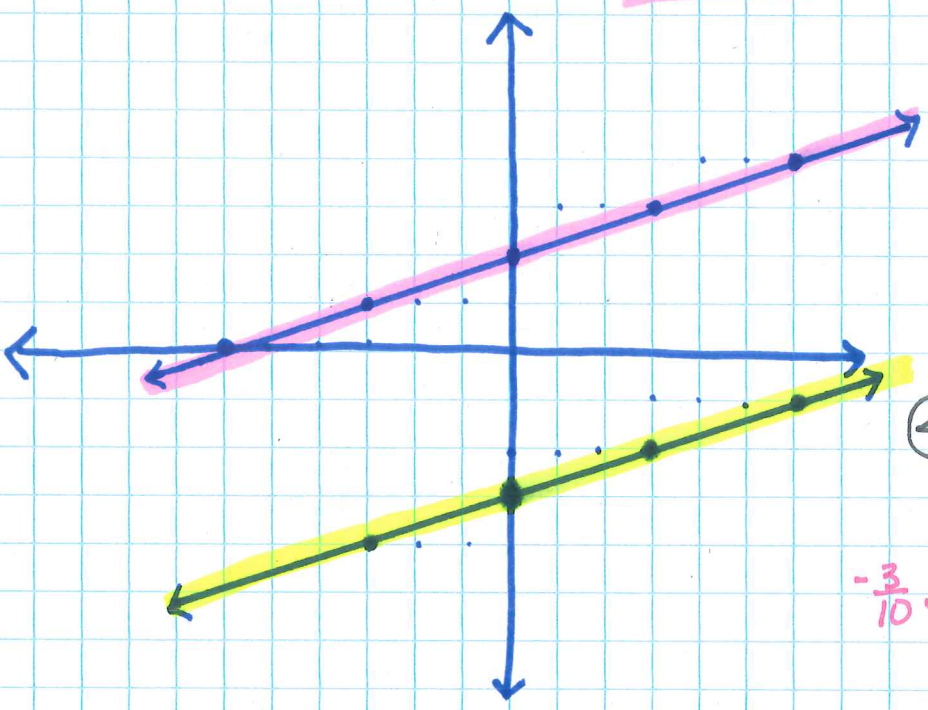


$d = 6$ units

Vertical lines just count.

13.) Find the distance between // lines.

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



② ⊥ eq. to $y = \frac{1}{3}x - 3$ $(0, -3)$

⊥ EQ: $y = -3x - 3$

③ $y = -3x - 3$

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

④ Solve System

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

$-\frac{3}{10} \cdot -\frac{10}{3}x = 5 \cdot -\frac{3}{10}$

$x = -\frac{15}{10}$ $\boxed{x = -\frac{3}{2}}$

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

$\boxed{y = \frac{3}{2}}$ $\left(-\frac{3}{2}, \frac{3}{2}\right)$

⑤ Find the distance between $(0, -3)$ and $\left(-\frac{3}{2}, \frac{3}{2}\right)$
x_1 y_1 x_2 y_2

Can't use Δ for pyth. thm. so use distance formula

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

$d = \sqrt{(0 - -\frac{3}{2})^2 + (-3 - \frac{3}{2})^2} \Rightarrow d = \sqrt{(\frac{3}{2})^2 + (-\frac{9}{2})^2} \Rightarrow d = \sqrt{\frac{9}{4} + \frac{81}{4}}$

$d = \sqrt{\frac{90}{4}} = \frac{\sqrt{90}}{\sqrt{4}} = \frac{3\sqrt{10}}{2}$ $\boxed{d = \frac{3\sqrt{10}}{2}}$

16.) Find distance between // lines.

$y = 4x$ and $y = 4x - 17$

② ⊥ eq. to $y = 4x$

⊥ EQ: $y = -\frac{1}{4}x$ $(0,0)$

③ 2 EQ: $y = 4x - 17$

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

④ $4x - 17 = -\frac{1}{4}x$

$-\frac{4}{17} \cdot -17 = \frac{-17}{4}x \cdot \frac{-4}{17}$

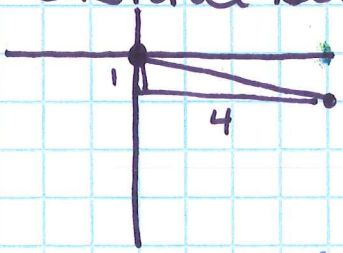
$4 = x$

$4(4) - 17 = y$

$-1 = y$

$(4, -1)$

distance between $(0,0)$ and $(4,-1)$

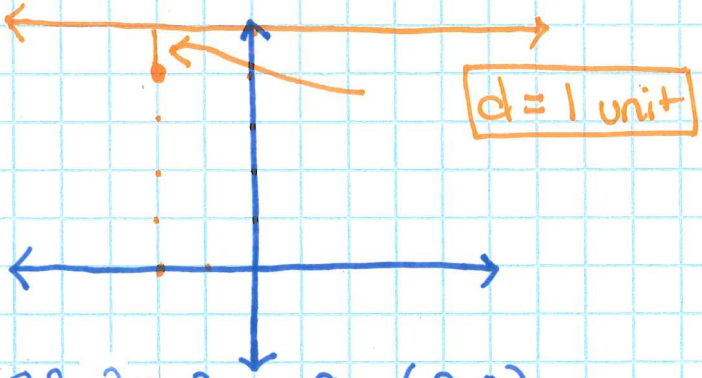


$1^2 + 4^2 = d^2$

$\sqrt{17} = d$

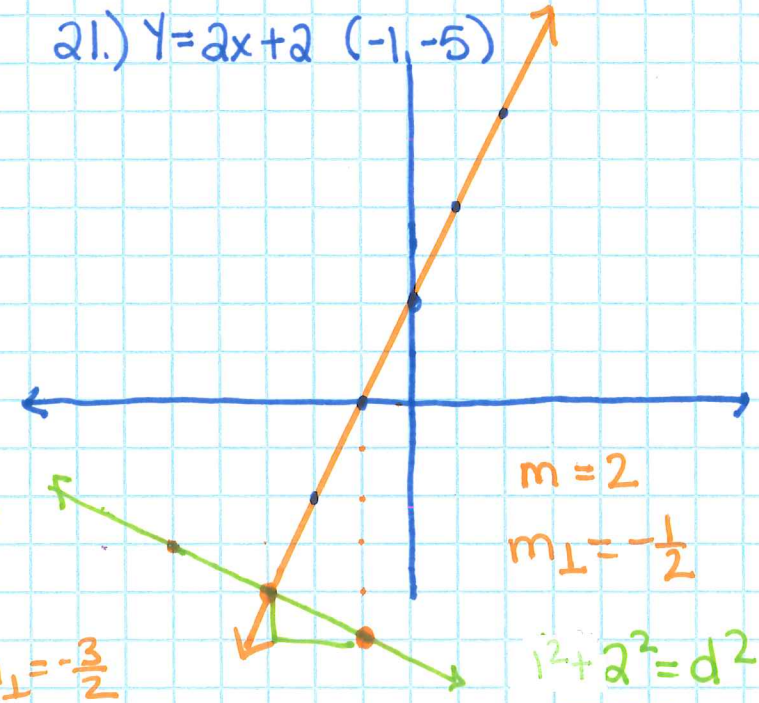
20.) Graph each line. Construct a ⊥ segment thru the given point. Then find distance from point to line.

20.) $y = 5$ $(-2,4)$



$d = 1$ unit

21.) $y = 2x + 2$ $(-1,-5)$



$m = 2$

$m_\perp = -\frac{1}{2}$

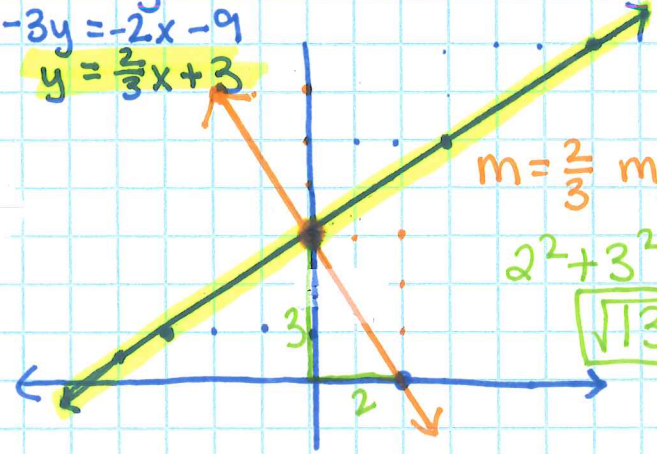
$1^2 + 2^2 = d^2$

$\sqrt{5} = d$

22. $2x - 3y = -9$ $(2,0)$

$-3y = -2x - 9$

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



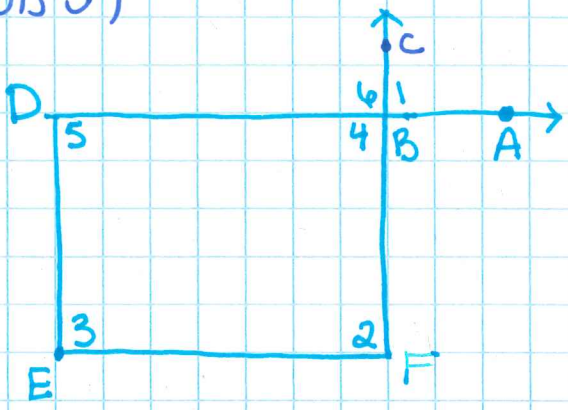
$m = \frac{2}{3}$ $m_\perp = -\frac{3}{2}$

$2^2 + 3^2 = d^2$

$\sqrt{13} = d$

24.) The lines are ⊥ ...

25.) You can practice w/ your tools! (It is required to use your tools :)



36.) $\angle 5 \cong \angle 6$

$\overline{DE} \parallel \overline{BF}$ $\cong$ alt. int $\angle$s form $\parallel$ lines

37.) $\angle 6 \cong \angle 2$

$\overleftrightarrow{DA} \parallel \overleftrightarrow{EF}$ $\cong$ corr. $\angle$s form $\parallel$ lines

38.) $\angle 1$ is suppl. to $\angle 2$. (multiple answers + multiple relationships)

If $\angle 1 + \angle 2 = 180°$ and $\angle 1 \cong \angle 4$
then $\angle 4 + \angle 2 = 180°$ by substitution.
$\therefore \overleftrightarrow{DA} \parallel \overleftrightarrow{EF}$ by suppl. cons. int. $\angle$s form $\cong$

39.) a $\Rightarrow y = \frac{1}{2}x + 3$ 40.) b $\Rightarrow y = -x + 5$ 41.) c $\Rightarrow y = \frac{2}{3}x - 2$

42) $\perp$ line to a containing $(-1, -4)$

$m_\perp = -2$ $(-1, -4)$

Find b:

$-4 = -2(-1) + b$
$-4 = 2 + b$
$-6 = b$

$\boxed{y = -2x - 6}$

43.) $\parallel$ to c containing $(2, 5)$

$m_\parallel = \frac{2}{3}$ $(2, 5)$

Find b:

$5 = \frac{2}{3}(2) + b$
$5 = \frac{4}{3} + b$
$\frac{15}{3} = \frac{4}{3} + b$
$-\frac{4}{3} \quad -\frac{4}{3}$
$\frac{11}{3} = b$

$\boxed{y = \frac{2}{3}x + \frac{11}{3}}$

♥ I Love you guys ♥ but keep this all in fractions!