**Section 4.6 SLOPE! Homework**

1. Find the slope between: (-3, 2) and (4, 6)

$(-3, 2)$
$(4, 6)$   $m = \dfrac{6-2}{4+3} = \boxed{\dfrac{4}{7}}$

2. Find x when the slope between the two coordinates (5, -3) and (x, 7) is m = ½
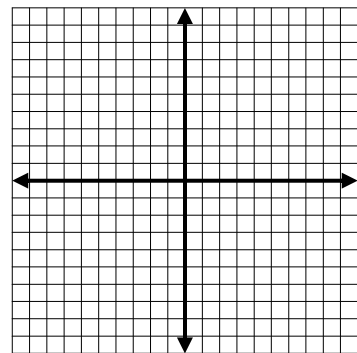
$(5, -3)$
$(x, 7)$   $\dfrac{7+3}{x-5} = \dfrac{1}{2}$

$x - 5 = 20$

$\boxed{x = 25}$

3. a. What is the slope of each line graphed below?
   b. What is the equation of each line graphed below?



$k \leftarrow \begin{array}{l} y = 6 \\ m = 0 \end{array}$

$l \leftarrow \begin{array}{l} x = 4 \\ m = und. \end{array}$
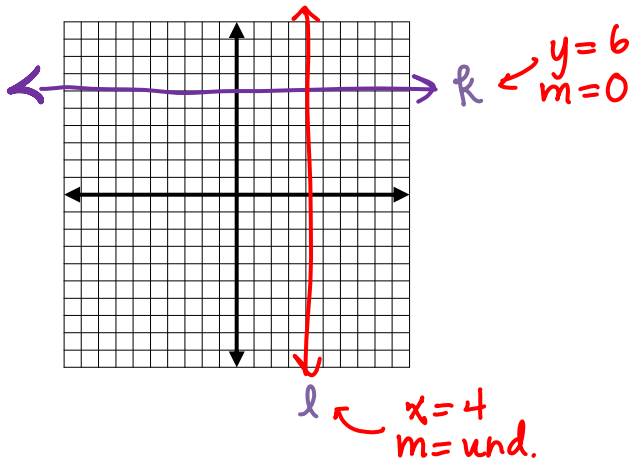
4. Determine 2 points that will yield a positive slope and 2 other points that will yield a negative slope. Graph the two lines.



you try ☺

4. Write the equation of a line parallel to 3x – 6y = 18 and through (6, -4).

$-6y = -3x + 18$
$y = \dfrac{1}{2}x - 3$

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

$\boxed{y + 4 = \dfrac{1}{2}(x - 6)}$

5. Write the equation of a line through (8.6, -4.2) and (-3.7, and 4.23).

$(8.6, -4.2)$
$(-3.7, 4.23)$   $m = \dfrac{4.23 + 4.2}{-3.7 - 8.6} = \dfrac{8.43}{-12.3} = \dfrac{-281}{410}$

$y - 4.23 = \dfrac{-281}{410}(x + 3.7)$

6. Write the equation of a line perpendicular to $y = \dfrac{-2}{3}x + 9$ and through the midpoint of a segment with endpoints (8, 4) and (15, -1).

midpt
$(11.5, 1.5)$

$m = \dfrac{-2}{3}$   $\perp m = \dfrac{3}{2}$

$\boxed{y - 1.5 = \dfrac{3}{2}(x - 11.5)}$

7. Find the equation of the line given in the table:

| X | Y |
|---|---|
| 8 | -3 |
| 12 | -5 |
| 16 | -7 |
| 20 | -9 |

+4 ⟶ ) -2
+4 ⟶ ) -2
+4 ⟶ ) -2

$m = \dfrac{-2}{4}$

$\boxed{m = -\dfrac{1}{2}}$

8. Are (-6,5), (1,7) and (15, 10) collinear?

A   B   C

$m_{AB} = \dfrac{7-5}{1+6} = \dfrac{2}{7}$

$m_{BC} = \dfrac{10-7}{15-1} = \dfrac{3}{14}$

NO!!

9. Triangle BAT has vertices located at B (-2, 7), A (3, 3) and T (0, -4).

a. Find the slope of $\overline{BA}$.   (-2,7) (3,3)   $m = \dfrac{7-3}{-2-3} = \boxed{\dfrac{4}{-5}}$

(-2,7)
B   (.5,5)
(-1, 1.5)   A (3,3)
(1.5, -.5)
T (0,-4)

b. Find the equation of the median from A.

(3,3)
(-1, 1.5)   $m_{med}$ from A $= \dfrac{3-1.5}{3+4} = \dfrac{1.5}{7} = \dfrac{3}{14}$   $\boxed{y - 3 = \dfrac{3}{14}(x-3)}$

c. Find the equation of the median from T.

(0,-4)
(.5, 5)   $m_{med}$ from T $= \dfrac{5+4}{.5-0} = \dfrac{9}{.5} = \dfrac{18}{1}$   $y+4 = 18(x-0)$   $\boxed{y+4 = 18x}$

d. Find the equation of the altitude from B.

(3,3)
(0,-4)   $m_{AT} = \dfrac{3+4}{3-0} = \dfrac{7}{3}$   $\perp m = -\dfrac{3}{7}$   $\boxed{y - 7 = -\dfrac{3}{7}(x+2)}$

e. Find the equation of the altitude from T.

(-2,7)
(3,3)   $m_{AB} = \dfrac{7-3}{-2-3} = \dfrac{4}{-5}$   $\perp m = \dfrac{5}{4}$   $y + 4 = \dfrac{5}{4}(x-0)$   $\boxed{y+4 = \dfrac{5}{4}x}$

f. Find the equation of the line through the midpoints of $\overline{BA}$ and $\overline{AT}$.

midpt $\overline{BA}$ : (.5,5)
midpt $\overline{AT}$ (1.5, -.5)   $m = \dfrac{5+.5}{.5-1.5} = \dfrac{5.5}{-1} = \boxed{-11}$   $\boxed{y - 5 = -11\left(x - \dfrac{1}{2}\right)}$

g. Find the equation of the line parallel to $\overline{BA}$ and through T.

T (0,-4)

(-2,7)
(3,3)   $m = \dfrac{7-3}{-2-3} = \dfrac{4}{-5}$   $y + 4 = \dfrac{4}{-5}(x-0)$   $\boxed{y + 4 = -\dfrac{4}{5}x}$