Math 9 – Analytic Geometry

Name: Mr. Van Styland

Homework #5: Parallel and Perpendicular Slopes

Due Date: _____ 5T___

1. Identify whether each pair of lines is parallel, perpendicular, or neither.

study slopes in $y=mx+b$

a) $x-y+1=0$
$4x+4y+1=0$

1 & -1
perpendicular

b) $3x-2y+12=0$
$-2x-3y-12=0$

$\frac{3}{2}$ & $-\frac{2}{3}$
perpendicular

c) $2x+5y-13=0$
$2x-5y+23=0$

$\frac{2}{5}$ and $-\frac{2}{5}$
Neither

d) $x+9y+1=0$
$9x+y+1=0$

-9 and $-\frac{1}{9}$
Neither

2. Given the points $A(-8,-2)$, $B(-2,2)$, $C(6,4)$, and $D(8,1)$, determine whether m_{AB} and m_{CD} are parallel, perpendicular, or neither.

$= \frac{-3}{2}$

$m_{AB} = \frac{2}{3}$ ← perpendicular

For the following questions, break down what you need (a slope and a point), and then use the Point-Slope Form, $y - y_1 = m(x - x_1)$, to get the required equation.

$y = mx + b$

3. Determine the Slope-Intercept for of the line parallel to $2x - 3y + 1 = 0$ and passes through the point $(1, 2)$.

Point

① Find slope

$\frac{2}{3}$ slope

② $y - y_1 = m(x - x_1)$

$y - 2 = \frac{2}{3}(x - 1)$

$y = \frac{2}{3}x + \frac{4}{3}$

4. Determine the Standard Form of the line perpendicular to $x - 5y + 2 = 0$ and passes through the point $(-2, 5)$.

① Find slope

② $y - y_1 = m(x - x_1)$

$y - 5 = -5(x - (-2))$

$5x + y + 5 = 0$

But perpendicular would be $-\frac{5}{1}$ or -5

5. Determine the Slope-Intercept Form of the line perpendicular to $3x - 12y + 16 = 0$ and having the same y-intercept as $14x - 13y - 52 = 0$.

① Find perp. slope ② Find y-int ③ My Equation:

$\frac{1}{4}$

So $-\frac{4}{1}$ or -4

So, $(0, -4)$

*Alternately, sub in $x = 0$ + solve

$y = -4x - 4$

6. Determine the Standard Form of the line parallel to $x+9y-2=0$ and has the same x-intercept as the line $2x-9y+27=0$.

① Find slope

② x-int when $y=0$

③ My Equation

$-\frac{1}{9}$

m

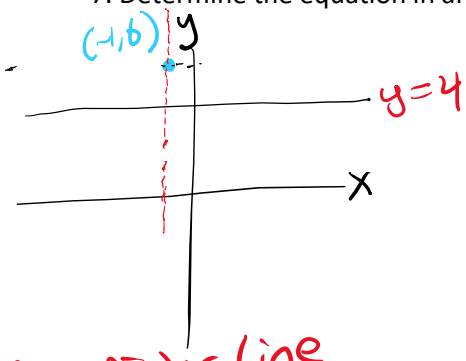
So, $(-13.5, 0)$

$(0 = x + 9y + 13.5)$ x2

Can't have decimal.

$0 = 2x + 18y + 27$

7. Determine the equation in any form which is perpendicular to $y-4=0$ and passes through $(-1,6)$.



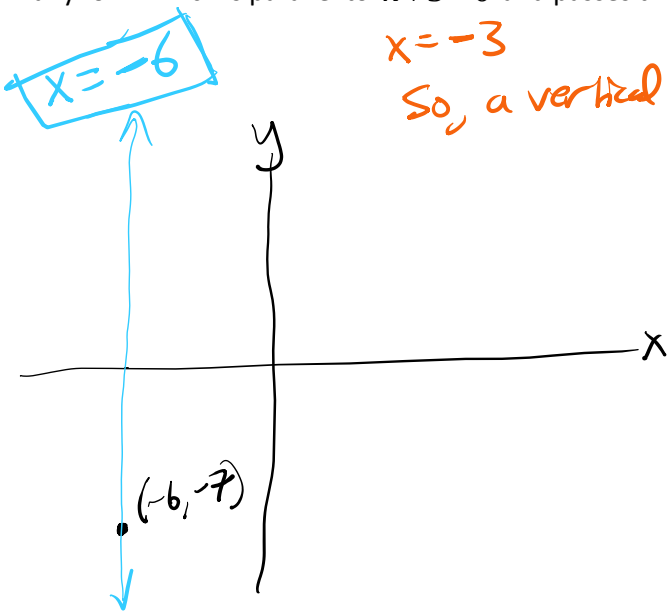
$y=4$

So, horizontal line, slope $=0$

Perpendicular Line

$x=-1$

8. Determine the equation in any form which is parallel to $x+3=0$ and passes through $(-6,-7)$.



$x=-3$

So, a vertical line. Slope is undefined