Homework 03

MATH 1550: Precalculus - Fall 2010 - Section 10

Due: Tuesday 14, September, in class

1. Given the following data, first say if the matching line is a vertical line or a horizontal line or neither (you may have to "*try to compute*" the slope, when it is not given). In any case, find the equation in any form you prefer ($y = mx + c$ or $Ax + By + C = 0$).

   (a) Slope $= -4$; Point $(2, 3)$

   (b) Point $= (1, 4)$; Point $(2, 2)$

   (c) Slope $= 0$; Point $(4, 3)$

   (d) Point $= (2, 4)$; Point $(2, 9)$

   (e) Point $= (-1, -1)$; Point $(2, 2)$

   (f) Slope undefined; Point $(3, 3)$

   (g) $x-$intercept $= 1$; $y-$intercept $= 1$

2. Given the line $3x - y - 3 = 0$,

   (a) Rewrite it in the $y = mx + c$ form.

   (b) Find the slope, $x-$intercept and $y-$intercept

   (c) Find the equation of the line parallel to it passing through the point $(10, -10)$

   (d) Find the equation of the line perpendicular to it passing through the point $(10, -10)$

   (e) Can the line passing through the two points $(1, 2)$ and $(-1, -2)$ be parallel or perpendicular to it?

3. "We discussed in class that we can draw a unique line connecting any two distinct points. If we are given three points, we may or may not be able to draw a single line connecting them. Suppose we are given three points, called P, Q and R. If the point R lies on the line connecting P and Q then, we can draw one line connecting all three points. If three points P, Q and R lie on the same line we say that they are ***collinear***"

   Now, check if three the points $P = (-3, 2)$, $Q = (3, 4)$ and $R = (4, -2)$ are collinear, by first finding the equation of the line connecting P and Q and then checking if R lies on that line.

4. We can easily check if three points P, Q and R are collinear by comparing the slopes of the line connecting P to Q and the line connecting Q to R. If the two slopes are the same, the three points are collinear. If the slopes are different, the three points are not collinear.

   Now, check if three the points $P = (-3, 2)$, $Q = (3, 4)$ and $R = (4, -2)$ are collinear, by by comparing the slopes of the line connecting P to Q and the line connecting Q to R.