HOMEWORK 3 - MATH 102

DUE DATE: Monday, October 1

INSTRUCTOR: George Voutsadakis

Read each problem **very carefully** before starting to solve it. Four out of the eight problems will be chosen at random and graded. Each problem graded is worth 3 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Solve the absolute value-equations:
   (a) $3|2x+1|+7=19$
   (b) $|9x+5|=|6x-3|$
2. Solve, graph and write the solution set in interval notation:
   (a) $|5x-10|+3<12$
   (b) $|7-4x|-5\geq 3$
3. Find the x- and the y-intercepts of the equation $2x-3y=-12$ and then sketch the graph of the equation.
4. Sketch the graphs of the equations $-\frac{2}{5}x=4$ and $5-y=\frac{3}{2}$.
5. Find the domains of the following functions:
   (a) $f(x)=\frac{x-4}{(x+3)(x-7)}$
   (b) $g(x)=\sqrt{7-3x}$
6. (a) Consider the function $f(x)=\frac{x+7}{2x-1}$. Find the values of the expressions $f(2), f(3)$ and $\frac{f(2)+f(3)}{8}$.
   (b) Consider the functions $f=\{(1,3),(-1,5),(-3,7),(-5,9)\}, g=\{(-2,4),(0,6),(2,8),(4,10)\}$. Find the values of $f(-3)-g(2)$ and $\frac{f(-1)}{g(4)}$.
7. (a) Determine whether the lines AB and CD are parallel, perpendicular or neither, if $A(4,3), B(-6,-2), C(-1,11), D(5,-1)$. Show all the details of your work.
   (b) Determine x if you know that the line through $A(x,5)$ and $B(-2,3)$ is perpendicular to the line with slope $\frac{2}{5}$.
8. (a) Find the midpoint of the line segment AB joining $A(-15,7)$ and $B(23,-4)$.
   (b) Find the slope and the y-intercept of the linear equation $7y-14x=-42$ and graph the equation.