EXAM 2 - MATH 102 YOUR NAME:

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

- 1. Recall that, given a real number z, the absolute value |z| of z denotes the distance of the point representing z on the real number line from the origin (that represents the point 0).
 - (a) What can you conclude about the number z, if you know that $|z| \leq 7$?
 - (b) Solve the inequality $|8 5x| \le 7$ and graph the solution set.

- 2. Let L_1 be the line with equation 2x + 3y = 1 and let L_2 be the line that passes through the points (-2, -1) and (2, -7).
 - (a) Find the slope m_1 of line L_1 .
 - (b) Find the slope m_2 of line L_2 .
 - (c) Are lines L_1 and L_2 perpendicular lines? Please, explain.

- 3. The sum of two numbers x and y is 1 and their difference is 20.
 - (a) Write two equations expressing the data in the statement of the problem in terms of x and y.
 - (b) Use substitution to solve the system of equations you wrote in Part (a) for x and y to find which are these two numbers.

- 4. Evaluate and/or simplify the following expressions (recall that your answers should not contain negative exponents).
 - (a) $(-3x^{-2}y^3)^{-4}$

(b) $\left(\frac{4x^5}{5y^{-3}}\right)^{-2}$

- 5. Perform the following operations and/or simplify your answers.
 - (a) $(7 2x x^2) (x^2 5x + 6)$

(b)
$$(2w-3)(w+6)$$

(c)
$$(3x^2 - 5x)(2x^2 + 6x)$$