EXAM 1 - MATH 102 Friday, September 22

YOUR NAME:_____ George Voutsadakis

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. Solve the linear equation
$$\frac{3x-5}{2} - \frac{5x-2}{3} = \frac{2x+3}{5} - 4.$$

2. How many gallons of an 18% acid solution should be mixed with a 10% acid solution to obtain 60 gallons of a 15% acid solution?

   (a) Introduce variable(s) and state precisely their meaning.

   (b) Write an equation reflecting the data and solve it to answer the question posed.

3. Sam wants to invest a total of \$10,000 in two investments, one yielding a 10% annual return and the other yielding a 20% annual return. How much should he invest in each to get a total return of \$1,700?

   (a) Introduce variable(s) and state precisely their meaning.

   (b) Write an equation reflecting the data and solve it to answer the question posed.

4. Find an equation for the line ℓ that passes through $(7, -2)$ and is perpendicular to the line ℓ' that has equation $3x + y = 9$.

5. (a) Solve the compound inequality and graph the solution set.

$$3 - 5(x - 1) \leq 10 \quad \text{or} \quad \frac{1 - 3x}{4} > 7.$$

(b) Solve the absolute value inequality $5|3 - 2x| - 9 \geq 11$ and graph the solution set.