EXAM 1 - MATH 102
DATE: Tuesday, January 30
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 5 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. (a) Perform the operation $-\frac{3}{25} \div (\frac{27}{125})$. (1 point)

   (b) Perform the operations -2^5 (1 point) and $(-2)^5$ (1 point).

   (c) Simplify and write your answer without negative exponents $(\frac{2a^3b^{-4}}{c^5})^{-3}$. (2 points)

2. (a) Solve the equation $5(1-y)+8 = 7(y-5)$. (1 point)

   (b) Solve the equation $\frac{4x+3}{5} + \frac{1}{2} = \frac{x}{3}$. (2 points)

   (c) Solve the equation $7.2(3-t) = 2.4(3-t) + 4.8$. (2 points)

3. A car leaves a town traveling at an average speed of 60 km/hr. Two hours later a highway patrol officer leaves from the same starting point to overtake the car. The average speed of the officer is 90 km/hr.

   (a) Write one equation for the distance d_c traveled by the car and one equation for the distance d_p traveled by the patrol officer. (2 points)

   (b) Use the two equations to find the time it takes for the two to meet. (2 points)

   (c) Find the distance from town at which they will meet. (1 point)

4. A variety of Jamaican coffee sells for $20 per pound. How many pounds of Jamaican should be mixed with 80 lbs of regular coffee selling at $8 per pound so that the result is a mixture selling for $10.40 per pound?

   (a) Set and describe your variable(s) carefully. (1 point)

   (b) Write an equations using your variables that mathematically reflect the data in the problem. (2 points)

   (c) Solve the equations to answer the problem. (2 points)

5. (a) Solve the inequality $7x-12 \geq 3(3x+2)$, graph the solution and, then, write it in interval notation. (1 point)

   (b) Solve the inequality $\frac{2x-5}{3} + \frac{5}{6} < \frac{7x}{2}$ and write the solution set in interval notation. (2 points)

   (c) Solve the system of inequalities $x-3 < 1$ **and** $1 \geq -x$, graph the solution set and, then, write it in interval notation. (2 points)