Math 90 – Quiz # 5

Name __Key__

a) Write a system of equations for the following word problem

"Small drinks cost \$1, medium drinks cost \$1.40, and large drinks cost \$2. A total of 24 drinks are bought and \$37.60 is spent. Twice as many large drinks as small drinks are bought."

$$S + M + L = 24$$
$$1S + 1.4M + 2L = 37.6$$
$$-2S \qquad + L = 0 \quad (\text{from } L = 2S)$$

b) Solve the system to determine how many of each type of drink is bought.

To eliminate M:

$-1.4 \cdot$ row 1:

$$-1.4S - 1.4M - 1.4L = -33.6$$
$$1S + 1.4M + 2L = 37.6$$
$$\overline{\qquad\qquad\qquad\qquad = 4}$$

$$-.4S \qquad -.6L$$
$$-2S \qquad + L = 0$$

By subst., $L = 2S$

$$-.4S + .6(2S) = 4$$
$$-.4S + 1.2S = \frac{.8S}{.8} = \frac{4}{.8}$$

$S = 5$ small

$L = 2 \cdot 5 = 10$ large

$M = 24 - 10 - 5$
$\quad = 9$ medium