MAPLE Practice Quiz 7

1. Solve the following linear system by using row reduction and back substitution on its augmented matrix:

$$2 x_1 + 3 x_2 + 4 x_3 + 5 x_4 + 6 x_5 + 7 x_6 = 8$$
$$3 x_1 + 3 x_2 + 4 x_3 + 5 x_4 + 6 x_5 + 7 x_6 = 11$$
$$4 x_1 + 4 x_2 + 4 x_3 + 5 x_4 + 6 x_5 + 7 x_6 = 37$$
$$5 x_1 + 5 x_2 + 5 x_3 + 5 x_4 + 6 x_5 + 7 x_6 = 32$$

Repeat the exercise with the rhs all equal 0.

2. Find the values of a and b for which the system of equations has
   i. a unique solution
   ii. an infinite number of solutions
   iii. no solution

$$x_1 + x_2 + x_3 = 6$$
$$x_1 + 2 x_2 + 3 x_3 = 10$$
$$x_1 + 2 x_2 + a x_3 = b$$

3. Find the values of b for which the system of equations has a solution. Then solve the system for each value of b.

$$x_1 + x_2 + x_3 = 1$$
$$x_1 + 2 x_2 + 4 x_3 = b$$
$$x_1 + 4 x_2 + 10 x_3 = b^2$$