3.2 Exercises 

Problem 1 This linear system is in **echelon form**. Solve it by back substitution.

$$x_1 - 10x_2 + 3x_3 - 13x_4 = 5$$
$$x_3 + 3x_4 = 10$$

Problem 2 Use elementary row operations to transform the following in a coefficient matrix to **echelon form**. Then solve the system by back substitution.

$$4x_1 - 2x_2 - 3x_3 + x_4 = 3$$
$$2x_1 - 2x_2 - 5x_3 = -10$$
$$4x_1 + x_2 + 2x_3 + x_4 = 17$$
$$3x_1 + x_3 + x_4 = 12$$

Problem 3 Determine for what values of k the following system has

a) a unique solution: *b*) no solution; *c*) infinitely many solutions.

$$3x + 2y = 1$$
$$7x + 5y = k$$