MA 162 Recitation Worksheet Thursday 11$^{\text{th}}$ September 2014

Please attempt as many of the questions as you have time.

1. Determine whether each system of linear equations has a unique solution, infinitely many solutions, or no solution. Find all solutions whenever they exist.

   (a)   (b)   (c)   (d)

$$x + 4y = 7 \qquad x + 2y = 7 \qquad 2x - 5y = 10 \qquad 4x - 5y = 14$$
$$(1/2)x + 2y = 5 \qquad 2x - y = 4 \qquad 6x - 15y = 30 \qquad 2x + 3y = -4$$

2. Determine the value of k for which the system of linear equations

$$2x - y = 3$$
$$4x + ky = 4$$

   has no solution.

   For Problem $3 - 5$, formulate (i.e. write down all the equations) but don't solve the problem

3. The total number of passengers riding a certain city bus during the morning shift is 1000. If the child's fare is \$.50, the adult fare is \$1.50, and the total revenue from the fares in the morning shift is \$1300, how many children and how many adults rode the bus during the morning shift?

4. The Johnson Farm has 500 acres of land allotted for cultivating corn and wheat. The cost of cultivating corn and wheat (including seeds and labor) is \$42 and \$30 per acre, respectively. Jacob Johnson has \$18,600 available for cultivating these crops. If he wishes to use all the alloted land and his entire budget for cultivating these two crops, how many acres of each crop should he plant.

5. For opening night at the Opera House, a total of 1000 tickets were sold. Front orchestra seats cost \$80 apiece, rear orchestra seats cost \$60 apiece, and the front balcony seats cost \$50 apiece. The combined number of tickets sold for the front orchestra and rear orchestra exceed twice the number of front balcony tickets sold by 400. The total receipts for the performance we \$62,800. Determine how many tickets of each type sold.