Latex Assignment4

D.V.S. NIKHIL

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Exercise 10.3.5

1. Which of the following pairs of linear equations has unique solution, no solution or infinitely many solutions.In case there is a unique solution,find it by using cross multiplication method:

   (i) $x - 3y - 3 = 0$
   $3x - 9y - 2 = 0$

   (ii) $2x + y = 5$
   $3x + 2y = 8$

   (iii) $3x - 5y = 20$
   $6x - 10y = 40$

   (iv) $x - 3y - 7 = 0$
   $3x - 3y - 15 = 0$

2. (i) For which values of a and b does the following pair of linear equations have an infinite number of solutions?

$$2x + 3y = 7 \tag{1}$$
$$(a - b)x + (a - b)y = 3a + b - 2 \tag{2}$$

   (ii) For which value of k will the following pair of linear equation have no solution?

$$3x + y = 1 \tag{3}$$
$$(2k - 1)x + (k - 1)y = 2k + 1 \tag{4}$$

3. Solve the following pair of linear equations by the substituions and cross multiplication method:

$$8x + 5y = 93x + 2y = 4 \tag{5}$$

4. Form the pair of linear equations in the following problems and find their solutions by any algebraic method:

(i) A part of monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in the mess.When a student A takes food for 20 days she has to pay Rs.1000 as hostel charges whereas a student B who takes food for 26 days, pays Rs.1180 as hostel charges.Find the fixed charges and the cost of food per day.

(ii) A fraction becomes $\frac{1}{3}$ when 1 is subtracted from the numerator and it becomes $\frac{1}{4}$ when 8 is added to the denominator. Find the fraction.

(iii) Yash scored 40 marks in a test,getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test?

(iv) Places A and B are 100km apart on a highway.One car starts from A and another from B at the same time.If the car travel in the same direction at different speeds, they meet in 5hrs. If they travel towards each other,they meet in 1hr.What are the speeds of the two cars?

(v) The area of rectangle gets reduced by 9 square units,if its length is reduced by 5 units and breadth is increased by 3 units. If we increase the length by 3 units and the breadth by 2 units, the area increases by 67 square units.Find the dimensions of the rectangle.