Linear

1. (a) Find whether the following pair linear equations are consistent or inconsistent.
   $5x - 3y = 11$, $-10x + 6y = 22$.

   (b) Solve for x and y :
   $x + y = 6$, $2x - 3y = 4$.

2. Find out whether the pair of equations $2x + 3y = 0$ and $2x - 3y = 26$ is consistent or inconsistent.

3. (a) For what values of k, does the pair of linear equations $kx - 2y = 3$ and $3x + y = 5$ have a unique solution ?

   (b) What type of lines will you get by drawing the graph of the pair of equations $x - 2y + 3 = 0$ and $2x - 4y = 5$?

4. The residents of a housing society, on the occasion of environment day, decided to build two straight paths in the central park of the society and also plant trees along the boundary lines of each path.

   Taking one corner of the park as origin and the two mutually perpendicular lines as x-axis and y-axis, the paths were represented by the two linear equations $2x - 3y = 5$ and $-6x + 9y = 7$.

   Based on the above, answer the following questions :

   (i) Two paths represented by the two equations here are
   (A) intersecting
   (B) overlapping
   (C) parallel
   (D) mutually perpendicular

   (ii) Which one of the following points lie on the line $2x - 3y = 5$
   (A) $(-4, 1)$
   (B) $(4, -1)$
   (C) $(4, 1)$
   (D) $(-4, -1)$

   (iii) If the line $-6x + 9y = 7$ intersects the y-axis at a point,then its coordinates are :
   (A) $\left(0, \frac{7}{9}\right)$
   (B) $\left(\frac{7}{9}, 0\right)$
   (C) $\left(-\frac{7}{6}, 0\right)$

(D) $\left(0, -\frac{7}{6}\right)$

(iv) If a pair of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has unique solution,then

(A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

(B) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

(C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(D) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(v) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then the lines $a_1x+b_1y+c_1 = 0$ and $a_2x+b_2y+c_2 = 0$ are

(A) parallel

(B) coincident

(C) intersecting

(D) perpendicular to each other

5. (a) The sum of the numerator and the denominator of a fraction is 18. If the denominator is increased by 2,the fraction reduces to $\frac{1}{3}$.Find the fraction.

(b) Find the value of k for which the system of equations $x + 2y = 5$ and $3x + ky + 15 = 0$ has no solution.

6. If the graph of a pair of lines $x - 2y + 3 = 0$ and $2x - 4y = 5$ be drawn, then what type of lines are drawn ?