Class – X
Math Assignment
Linear Equations

1. $\frac{x}{2}+3>\frac{x}{3}-1$

2. $-4 \le \frac{1-2x}{3} \le 4$ Also find number of integral values of x satisfying given inequality

3. $-2 \le 1-\frac{x}{3}+\frac{x}{4} \le 7$

4. $1+\frac{3x}{2}-\frac{2x}{3} \le 2+x$

5. Solve for x and y
   $7x - 5y = 11,\ 3x + 4y = 17$

6. Solve for x and y
   $\frac{x+1}{2}+\frac{y-1}{3}=8,\quad \frac{x-1}{3}+\frac{y+1}{2}=9$

7. Solve the pair of equations :
   $\frac{2}{x}+\frac{3}{y}=13$
   $\frac{5}{x}-\frac{4}{y}=-2$

8. Solve the following system of equations by the method of elimination using substitution :
   $(a + b)x + (a - b)\,y = a^2 + b^2$
   $(a - b)x + (a + b)\,y = a^2 + b^2$

9. Solve for x and y
   $4x - 8y = -4$
   $7x - 14y = -7$

10. Solve the following pair of equations by reducing them to a pair of linear equations:
    $\frac{1}{x-1}+\frac{1}{y-2}=2$
    $\frac{6}{x-1}-\frac{3}{y-2}=1$

11. Solve : $\frac{1}{2(2x+3y)}+\frac{12}{7(3x+2y)}=\frac{1}{2}$
    $\frac{7}{2x+3y}+\frac{4}{3x-2y}=2$
    Where $2x+3y \ne 0$ and $3x - 2y \ne 0$

12. Solve : $2x^2 + 3y^2 = 35;\ \frac{x^2}{2} + \frac{y^2}{3} = 5$

13. Solve the following pair of linear equations by the substitution method.
(i) $0.2\,x + 0.3y = 1.3,\ 0.4x + 0.5y = 2.3$
(ii) $\sqrt{2}x + \sqrt{3}y = 0,\ \sqrt{3}\,x - \sqrt{x}y = 0$

14. Solve the following pair of linear equations by the elimination method and the substitution method.
$\frac{x}{2} + \frac{2y}{3} = -1$ and $x - \frac{y}{3} = 3$

15. Solve the following pairs of equations by reducing them to a pair of linear equations.
(i) $\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2,\ \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$
(ii) $\frac{10}{x+y} + \frac{2}{x-y} = 4, \frac{15}{x+y} - \frac{5}{x-y} = -2$
(iii) $\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}, \frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = \frac{-1}{8}$

ANSWER

1. $x \in (-24, \infty)$
2. $x \in \left[-\frac{11}{2}, \frac{13}{2}\right]$ and 12
3. $x \in [-72, 36]$
4. $x \in [-6, \infty]$
5. $x = 3, y = 2$
6. $x = 7, y = 13$
7. $x = \frac{1}{2}$ and $y = \frac{1}{3}$
8. $x = \frac{a^2+b^2}{2a}, y = \frac{a^2+b^2}{2a}$
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10. $x = \frac{16}{7}, y = \frac{31}{11}$
11. $x = 2, y = 1$ 12. $x = \pm 2, y = \pm 3$
13. (i) $x = 2$ and $y = 3$ (ii) $x = 0$ and $y = 0$
14. $x = 2$ and $y = -3$
15. (i) $x = 4, y = 9$
(ii) $x = 3, y = 2$
(iii) $x = 1, y = 1$