

VIII Homework-12 (Linear Equations in One Variable)

Solve the following :-

$$(i) \frac{3x-8}{2x} = 1$$

$$(ii) \frac{5x}{2x-1} = 2$$

$$(iii) \frac{2x-3}{4x+5} = \frac{1}{3}$$

$$(iv) \frac{8}{x} = \frac{5}{x-1}$$

$$(v) \frac{5(1-x)+3(1+x)}{1-2x} = 8$$

$$(vi) \frac{0.2x+5}{3.5x-3} = \frac{2}{5}$$

$$(vii) \frac{y-(4-3y)}{2y-(3+4y)} = \frac{1}{5}$$

$$(viii) \frac{x}{5} = \frac{x-1}{6}$$

$$(ix) 0.4(3x-1) = 0.5x+1$$

$$(x) 8x-7-3x = 6x-2x-3$$

$$(xi) 10x-5-7x = 5x+15-8$$

$$(xii) 4t-3-(3t+1) = 5t-4$$

$$(xiii) 5(x-1)-2(x+8) = 0$$

$$(xiv) \frac{x}{2} - \frac{1}{4} \left(\frac{x-1}{3} \right) = \frac{1}{6} (x+1) + \frac{1}{12}$$

$$(xv) \frac{1}{2} (x+1) + \frac{1}{3} (x-1) = \frac{5}{12} (x-2)$$

$$(xvi) \frac{x+1}{4} = \frac{x-2}{3}$$

$$(xvii) \frac{2x-1}{5} = \frac{3x+1}{3}$$

$$(xviii) 1-(x-2) - [(x-3)-(x-1)] = 0$$

$$(xix) 3x - \frac{x-2}{3} = 4 - \frac{x-1}{4}$$

$$(xx) \frac{3t+5}{4} - 1 = \frac{4t-3}{5}$$

VIII Homework-12 (Linear Equations in One variable - Answers)

$$1) \frac{3x-8}{2x} = 1$$

$$\Rightarrow 3x-8 = 2x$$

$$\Rightarrow 3x-2x = 8$$

$$\therefore \underline{\underline{x = 8}}$$

$$2) \frac{5x}{2x-1} = 2$$

$$\Rightarrow 5x = 2(2x-1)$$

$$\Rightarrow 5x = 4x-2$$

$$\Rightarrow 5x-4x = -2$$

$$\therefore \underline{\underline{x = -2}}$$

$$3) \frac{2x-3}{4x+5} = \frac{1}{3}$$

$$\Rightarrow 3(2x-3) = 4x+5$$

$$\Rightarrow 6x-9 = 4x+5$$

$$\Rightarrow 6x-4x = 5+9$$

$$\Rightarrow 2x = 14$$

$$\therefore x = \frac{14}{2} = \underline{\underline{7}}$$

$$4) \frac{8}{x} = \frac{5}{x-1}$$

$$\Rightarrow 8(x-1) = 5x$$

$$\Rightarrow 8x-8 = 5x$$

$$\Rightarrow 8x-5x = 8$$

$$\Rightarrow 3x = 8$$

$$\therefore x = \frac{8}{3}$$

$$5) \frac{5(1-x)+3(1+x)}{1-2x} = 8$$

$$\Rightarrow 5 - 5x + 3 + 3x = 8(1-2x)$$

$$\Rightarrow 8 - 2x = 8 - 16x$$

$$\Rightarrow -2x + 16x = 8 - 8$$

$$\Rightarrow 14x = 0$$
$$\therefore x = \frac{0}{14} = \underline{\underline{0}}$$

$$6) \frac{0.2x + 5}{3.5x - 3} = \frac{2}{5}$$

$$\Rightarrow 5(0.2x + 5) = 2(3.5x - 3)$$

$$\Rightarrow 1x + 25 = 7x - 6$$

$$\Rightarrow 1x - 7x = -6 - 25$$

$$\Rightarrow -6x = -31$$

$$\therefore x = \frac{31}{6}$$

$$7) \frac{y - (4 - 3y)}{2y - (3 + 4y)} = \frac{1}{5}$$

$$\Rightarrow \frac{y - 4 + 3y}{2y - 3 - 4y} = \frac{1}{5}$$

$$\Rightarrow \frac{4y - 4}{-2y - 3} = \frac{1}{5}$$

$$\Rightarrow 5(4y - 4) = 1(-2y - 3)$$

$$\Rightarrow 20y - 20 = -2y - 3$$

$$\Rightarrow 20y + 2y = -3 + 20$$

$$\Rightarrow 22y = 17$$

$$\therefore y = \frac{17}{22}$$

$$8) \frac{x}{5} = \frac{x-1}{6}$$

$$\Rightarrow 6x = 5(x-1)$$

$$\Rightarrow 6x = 5x - 5$$

$$\Rightarrow 6x - 5x = -5$$

$$\therefore x = \underline{\underline{-5}}$$

$$9) 0.4(3x-1) = 0.5x+1$$

$$\Rightarrow 1.2x - 0.4 = 0.5x + 1$$

$$\Rightarrow 1.2x - 0.5x = 1 + 0.4$$

$$\Rightarrow 0.7x = 1.4$$

$$\therefore x = \frac{1.4}{0.7} = \frac{14}{7} = \underline{\underline{2}}$$

$$10) \quad 8x - 7 - 3x = 6x - 2x - 3$$

$$\Rightarrow 5x - 7 = 4x - 3$$

$$\Rightarrow 5x - 4x = -3 + 7$$

$$\therefore x = \underline{\underline{4}}$$

$$11) \quad 10x - 5 - 7x = 5x + 15 - 8$$

$$\Rightarrow 3x - 5 = 5x + 7$$

$$\Rightarrow 3x - 5x = 7 + 5$$

$$\Rightarrow -2x = 12$$

$$\therefore x = \frac{-12}{2} = \underline{\underline{-6}}$$

$$12) \quad 4t - 3 - (3t + 1) = 5t - 4$$

$$\Rightarrow 4t - 3 - 3t - 1 = 5t - 4$$

$$\Rightarrow t - 4 = 5t - 4$$

$$\Rightarrow t - 5t = -4 + 4$$

$$\Rightarrow -4t = 0$$

$$\therefore t = \frac{0}{-4} = \underline{\underline{0}}$$

$$13) \quad 5(x - 1) - 2(x + 8) = 0$$

$$\Rightarrow 5x - 5 - 2x - 16 = 0$$

$$\Rightarrow 3x - 21 = 0$$

$$\Rightarrow 3x = 21$$

$$\therefore x = \frac{21}{3} = \underline{\underline{7}}$$

$$14) \quad \frac{x}{2} - \frac{1}{4} \left(\frac{x-1}{3} \right) = \frac{1}{6} (x+1) + \frac{1}{12}$$

$$\Rightarrow \frac{x}{2} - \frac{x}{4} + \frac{1}{12} = \frac{x}{6} + \frac{1}{6} + \frac{1}{12}$$

$$\Rightarrow \frac{x \times 6}{2 \times 6} - \frac{x \times 3}{4 \times 3} + \frac{x \times 2}{6 \times 2} = \frac{1}{6} + \frac{1}{12} + \frac{1}{12}$$

$$\Rightarrow \frac{6x - 3x - 2x}{12} = \frac{1}{6}$$

$$\Rightarrow x = \frac{12}{6} = \underline{\underline{2}}$$

$$\therefore x = \underline{\underline{2}}$$

$$15) \frac{1}{2}(x+1) + \frac{1}{3}(x-1) = \frac{5}{12}(x-2)$$

$$\Rightarrow \frac{x}{2} + \frac{1}{2} + \frac{x}{3} - \frac{1}{3} = \frac{5x}{12} - \frac{10}{12}$$

$$\Rightarrow \frac{x^{x6}}{2^{x6}} + \frac{x^{x4}}{3^{x4}} - \frac{5x}{12} = \frac{-10}{12} - \frac{1^{x6}}{2^{x6}} + \frac{1^{x4}}{3^{x4}}$$

$$\Rightarrow \frac{6x + 4x - 5x}{12} = \frac{-10 - 6 + 4}{12}$$

$$\Rightarrow \frac{5x}{12} = \frac{-12}{12}$$

$$\Rightarrow 5x = -12$$

$$\therefore x = \frac{-12}{5}$$

$$16) \frac{x+1}{4} = \frac{x-2}{3}$$

$$\Rightarrow 3(x+1) = 4(x-2)$$

$$\Rightarrow 3x + 3 = 4x - 8$$

$$\Rightarrow 3x - 4x = -8 - 3$$

$$\Rightarrow -x = -11$$

$$\therefore x = 11$$

$$17) \frac{2x-1}{5} = \frac{3x+1}{3}$$

$$\Rightarrow 3(2x-1) = 5(3x+1)$$

$$\Rightarrow 6x - 3 = 15x + 5$$

$$\Rightarrow 6x - 15x = 5 + 3$$

$$\Rightarrow -9x = 8$$

$$\therefore x = \frac{-8}{9}$$

$$18) 1 - (x-2) - [(x-3) - (x-1)] = 0$$

$$\Rightarrow 1 - x + 2 - [x - 3 - x + 1] = 0$$

$$\Rightarrow -x + 3 - x + 3 + x - 1 = 0$$

$$\Rightarrow -x + 5 = 0$$

$$\Rightarrow -x = -5$$

$$\therefore x = 5$$

$$19) \quad 3x - \frac{x-2}{3} = 4 - \frac{x-1}{4}$$

$$\Rightarrow \frac{9x - (x-2)}{3} = \frac{16 - (x-1)}{4}$$

$$\Rightarrow \frac{9x - x + 2}{3} = \frac{16 - x + 1}{4}$$

$$\Rightarrow \frac{8x + 2}{3} = \frac{17 - x}{4}$$

$$\Rightarrow 4(8x + 2) = 3(17 - x)$$

$$\Rightarrow 32x + 8 = 51 - 3x$$

$$\Rightarrow 32x + 3x = 51 - 8$$

$$\Rightarrow 35x = 43$$

$$\therefore x = \frac{43}{35}$$

$$20) \quad \frac{3t+5}{4} - 1 = \frac{4t-3}{5}$$

$$\Rightarrow \frac{3t+5-4}{4} = \frac{4t-3}{5}$$

$$\Rightarrow \frac{3t+1}{4} = \frac{4t-3}{5}$$

$$\Rightarrow 5(3t+1) = 4(4t-3)$$

$$\Rightarrow 15t + 5 = 16t - 12$$

$$\Rightarrow 15t - 16t = -12 - 5$$

$$\Rightarrow -t = -17$$

$$\therefore t = 17.$$