

**ASSIGNMENT CLASS XI**

**LINEAR INEQUATIONS**

**Q1.** Solve the following in equations:

(i)  $\frac{1}{x-2} < 0$       (ii)  $\frac{x+1}{x+2} \geq 1$       (iii)  $\frac{x-3}{x-5} > 0$       (iv)  $\frac{x-2}{x+5} > 2$       (v)  $\frac{x+3}{x-2} \leq 2$

(vi)  $x^2 + 3x + 2 > 0$       (vii)  $x^3 - 6x^2 + 11x - 6 < 0$       (viii)  $\frac{1-x^2}{5x-6-x^2} < 0$

(ix)  $\frac{x^2 - 2x + 24}{x^2 - 3x + 4} \leq 4$       (x)  $\frac{2x^2 + x - 15}{2x^2 + 5x - 12} > 0$

**Q2.** Solve the system of in equations:

(a)  $\frac{x}{2x+1} \geq \frac{1}{4}, \frac{6x}{4x-1} < \frac{1}{2}$       (b)  $\frac{|x|-1}{|x|-2} \geq 0; x \in R, x \neq \pm 2$       (c)  $|x-1| + |x-2| \geq 4$

(d)  $3x-6 \geq 0, 4x-10 \leq 6$       (e)  $|x-1| \leq 5, |x| \geq 2$       (f)  $|3x-2| \leq \frac{1}{2}$

(g)  $|x+1| \geq 3$       (h)  $\frac{1}{x+1} - \frac{4}{(2+x)^2} > 0; x \neq -1, -2$       (i)  $\frac{x^2 - 2x + 5}{3x^2 - 2x - 5} > \frac{1}{2}$

**ANSWERS**

1. (i)  $x \in (-\infty, 2)$       (ii)  $x \in (-\infty, -2)$       (iii)  $x \in (-\infty, 3) \cup (5, \infty)$

(ii)  $x \in (-12, -5)$       (v)  $x \in (-\infty, 2) \cup [7, \infty)$       (vi)  $x \in (-\infty, -2) \cup (-1, \infty)$

(vii)  $x \in (2, 3) \cup (-\infty, 1)$       (viii)  $x \in (-1, 1) \cup (2, 3)$       (ix)  $x \in \left(-\infty, \frac{-2}{3}\right] \cup [4, \infty)$

(x)  $x \in (-\infty, -4) \cup \left(-3, \frac{3}{2}\right) \cup \left(\frac{5}{2}, \infty\right)$       2. (a) No Solution      (b)  $[-1, 1] \cup (-\infty, -2) \cup (2, \infty)$

(c)  $\left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{7}{2}, \infty\right)$       (d)  $[2, 4]$       (e)  $[-4, -2] \cup [2, 6]$       (f)  $\frac{1}{2} \leq x \leq \frac{5}{6}$

(g)  $x \geq 2, x \leq -4$       (h)  $(-1, \infty)$       (i)  $(-5, -1) \cup \left(\frac{5}{3}, 3\right)$