

## 2. Solution Set of inequality

$$|x+2| - |x-1| < x - \frac{3}{2} \quad \text{will be.}$$

Sol<sup>n</sup> This problem can be divided into three parts.

(i) if  $x < -2$

$$\Rightarrow -(x+2) + (x-1) < x - \frac{3}{2}$$

$$\Rightarrow x > -\frac{3}{2} ; \text{ but } \underline{-\frac{3}{2} > -2} \Rightarrow x \in \{\emptyset\}$$

(ii) if  $-2 \leq x < 1$

$$\Rightarrow (x+2) + (x-1) < x - \frac{3}{2}$$

$$\Rightarrow x < -\frac{5}{2} ; \text{ but } -\frac{5}{2} < -2 \Rightarrow x \in \{\emptyset\}$$

(iii) if  $x \geq 1$

$$\Rightarrow (x+2) - (x-1) < x - \frac{3}{2}$$

$$\Rightarrow x > \frac{9}{2} \quad \text{--- (2)}$$

also  $\frac{9}{2} > 1$

Intersection of ① & ②

$$x > \frac{9}{2} \Rightarrow x \in \left(\frac{9}{2}, \infty\right)$$