



Linear Inequations Ex 15.3 Q12

$$1 \leq |x - 2| \leq 3$$

$$\Rightarrow x \in [-3 + 2, -1 + 2] \cup [1 + 2, 3 + 2]$$

$$\Rightarrow x \in [-1, 1] \cup [3, 5]$$

\therefore The solution set for given inequality is $[-1, 1] \cup [3, 5]$.

Linear Inequations Ex 15.3 Q13

$$|3 - 4x| \geq 9$$

$$\Rightarrow 4 \left| \frac{3}{4} - x \right| \geq 9$$

$$\Rightarrow \left| \frac{3}{4} - x \right| \geq \frac{9}{4}$$

CASE1: When $-\infty < x \leq -\frac{3}{4}$

$$\left| \frac{3}{4} - x \right| = \left(\frac{3}{4} - x \right)$$

$$\therefore \left| \frac{3}{4} - x \right| \geq \frac{9}{4}$$

$$\Rightarrow \left(\frac{3}{4} - x \right) \geq \frac{9}{4}$$

$$\Rightarrow -\frac{6}{4} \geq x$$

$$\Rightarrow -\frac{3}{2} \geq x$$

But, $-\infty < x < -1$.

\therefore The solution set of the given inequation is $\left(-\infty, -\frac{3}{2} \right]$.

CASE2: When $-\frac{3}{4} < x < \infty$

$$\left| \frac{3}{4} - x \right| = -\left(\frac{3}{4} - x \right)$$

$$\therefore \left| \frac{3}{4} - x \right| \geq \frac{9}{4}$$

$$\Rightarrow -\left(\frac{3}{4} - x \right) \geq \frac{9}{4}$$

$$\Rightarrow x \geq 3$$

But, $-\frac{3}{4} < x < \infty$

\therefore The solution set of the given inequation is $[3, \infty)$.

Combining Case1 and Case2,

we obtain that the solution set of given in equality is $\left(-\infty, -\frac{3}{2}\right] \cup (3, \infty)$.

***** END *****