

Exercise 7.1

Q1. Solve the following equations.

(i) $\frac{2}{3}x - \frac{1}{2}x = x + \frac{1}{6}$

Solution:

Multiplying both sides by 6 we get

$$4x - 3x = 6x + 1$$

$$x = 6x + 1$$

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

$$\text{Solution set} = \left\{ -\frac{1}{5} \right\}$$

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

Solution:

Multiplying both sides by 6 we get

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

$$2x - 6 - 3x + 6 = -6$$

$$-x = -6$$

$$x = 6$$

$$\text{Solution set} = 6$$

(iii) $\frac{1}{2} \left(x - \frac{1}{6} \right) + \frac{2}{3} = \frac{5}{6} + \frac{1}{3} \left(\frac{1}{2} - 3x \right)$

Solution:

1

$$\frac{1}{2} \left(\frac{6x-1}{6} \right) + \frac{2}{3} = \frac{5}{6} + \frac{1}{3} \left(\frac{1-6x}{2} \right)$$

$$\text{Or } \frac{6x-1}{12} + \frac{2}{3} = \frac{5}{6} + \frac{1-6x}{6}$$

Multiplying both sides by 12

$$6x - 1 + 8 = 10 + 2 - 12x$$

$$6x + 12x = 10 + 2 + 1 - 8$$

$$18x = 5$$

$$x = \frac{5}{18}$$

$$\text{Solution set} = \frac{5}{18}$$

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

Solution:

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

$$3x + 1 = 2(3x - 2) - 18x$$

$$3x + 1 = 6x - 4 - 18x$$

$$3x - 6x + 18x = -4 - 1$$

$$15x = -5$$

$$x = \frac{-5}{15} = -\frac{1}{3}$$

$$\text{Solution set} = \left\{ -\frac{1}{3} \right\}$$

(v) $\frac{5(x-3)}{6} - x = 1 - \frac{x}{9}$

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Solution:

Multiplying both sides by 18 we get

$$15(x-3) - 18x = 18 - 2x$$

$$\text{Or } 15x - 45 - 18x = 18 - 2x$$

$$15x - 18x + 2x = 18 + 45$$

$$-x = 63$$

$$\text{Solution set} = \{-63\}$$

(vi) $\frac{x}{3x-6} = 2 - \frac{2x}{x-2}, x \neq 2$

Solution:

Multiplying both sides by

$$3x - 6 = 3(x - 2), \text{ we get}$$

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

$$x = 6x - 12 - 6x$$

$$x = -12$$

$$\text{Solution set} = -12$$

(vii) $\frac{2x}{2x+5} = \frac{2}{3} - \frac{5}{4x+10}, x \neq -\frac{5}{2}$

Solution:

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

Multiplying both sides by $6(2x+5)$ we get

$$6(2x) = 4(2x+5) - 15$$

$$\text{Or } 12x = 8x + 20 - 15$$

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$$x = \frac{5}{4}$$

$$\text{So, solution set} = \frac{5}{4}$$

(viii) $\frac{2x}{x-1} + \frac{1}{3} = \frac{5}{6} + \frac{2}{x-1}, x \neq 1$

Solution:Multiplying both sides by $6(x-1)$ we get

$$6(2x) + 2(x-1) = 5(x-1) + 2(6)$$

$$\text{Or } 12x + 12 - 2 = 5x - 5 + 12$$

$$14x - 5x = -5 + 12 + 2$$

$$9x = 9$$

$$x = 1$$

But it is given that $x \neq 1$ So the equation has no solution = $\{ \}$

(ix) $\frac{2}{x^2-1} - \frac{1}{x+1} = \frac{1}{x+1}, x \neq \pm 1$

Solution:Multiplying both sides by $x^2 - 1$

$$2 - (x-1) = x-1$$

$$2 - x + 1 = x - 1$$

$$-x + x = -1 - 2 - 1$$

$$-2x = -4$$

$$x = 2$$

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So, solution set = $\{2\}$

(x) $\frac{2}{3x+6} = \frac{1}{6} - \frac{1}{2(x+2)}$

Multiplying both sides by $6(x+2)$ we get

$$2(2) = (x+2) - 3$$

$$4 = x + 2 - 3$$

$$4 = x - 1$$

$$x = 5$$

$$\text{Solution set} = \{5\}$$

Q2. Solve each equation and check for extraneous solution, if any.

Extraneous solution:

When raising either side of the equation to a certain power may produce a nonequivalent equation to a certain power may produce a nonequivalent equation that has more solutions than the original equation. These additional solutions are called extraneous solutions. We must check our answer[s] for such solutions when working with radical equations.

(i) $\sqrt{3x+4} = 2$

Solution:

Taking square of both sides

$$3x + 4 = 4$$

$$3x = 4 - 4$$

$$3x = 0$$

5

$$\text{Or } x = 0$$

$$\therefore \text{solution set} = \{0\}$$

(ii) $\sqrt[3]{2x-4} - 2 = 0$

Taking cube of both sides

$$2x - 4 = 2^3 = 8$$

$$\text{Or } 2x = 8 + 4$$

$$2x = 12$$

$$\text{Or } x = 6$$

$$\therefore \text{solution set} = \{6\}$$

(iii) $\sqrt{x-3} - 7 = 0$

Solution:

Taking square of both sides

$$x - 3 = 49$$

$$\text{Or } x = 49 + 3$$

$$x = 52$$

$$\therefore \text{solution set} = \{52\}$$

(iv) $2\sqrt{t+4} = 5$

Solution:

Taking square of both sides

$$4(t+4) = 25$$

$$4t + 16 = 25$$

$$4t = 25 - 16 = 9$$

6

$$t = \left\{ \frac{9}{4} \right\}$$

$$\therefore \text{solution set} = \left\{ \frac{9}{4} \right\}$$

(v) $\sqrt[3]{2x+3} = \sqrt{x-2}$

Solution:

Taking cube of both sides

$$2x + 3 = x - 2$$

$$2x - x = -2 - 3$$

$$x = -5$$

$$\therefore \text{solution set} = \{-5\}$$

(vi) $\sqrt[3]{2-t} = \sqrt{2t-28}$

Solution:

Taking cube of both sides

$$2 - t = 2t - 28$$

$$-t - 2t = -28 - 2$$

$$-3t = -30$$

$$t = 10$$

$$\therefore \text{solution set} = \{10\}$$

(vii) $\sqrt{2t+6} - \sqrt{2t-5} = 0$

Solution:

$$\therefore \sqrt{2t+6} = \sqrt{2t-5}$$

Taking square of both sides

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$$2t + 6 = 2t - 5$$

$$11 = 0 \quad \text{Which is not possible}$$

$$\therefore \text{Solution Set} = \{ \} \text{ or } \emptyset$$

(viii) $\sqrt{\frac{x+1}{2x+5}} = 2, x \neq \frac{5}{2}$

Solution:

Squaring both sides

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

$$x + 1 = 4(2x + 5)$$

$$x - 1 = 8x + 20$$

$$x - 8x = 20 - 1$$

$$-7x = 19$$

$$\therefore \text{Solution Set} = \left\{ -\frac{19}{7} \right\}$$

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Exercise 7.2

Q1. Identify the following statements as True of False;

- i. $|x|=0$ has only one solution.
- ii. All absolute value equations have two solutions.
- iii. The equation $|x|=2$ is equivalent to $x=2$ or $x=-2$.
- iv. The equation $|x-4|=-4$ has no solution.
- v. The equation $|2x-3|=5$ is equivalent to $2x-3=5$ or $2x+3=5$

Answers:

i. T	ii. F	iii. T	iv. T	v. F
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Q2. Solve for x:

(i) $|3x-5|=4$

Solution:

The equation is equivalent to

$$3x-5=4 \text{ or } 3x-5=-4$$

$$3x=9 \text{ or } 3x=1$$

$$x=3 \text{ or } x=\frac{1}{3}$$

$$\text{Solution set}=\left\{3,\frac{1}{3}\right\}$$

(ii) $\frac{1}{2}|3x+2|-4=11$

Solution:

$$\frac{1}{2}|3x+2|-4=11$$

$$|3x+2|=30$$

The equation is equivalent to

$$3x+2=30 \text{ or } 3x+2=-30$$

$$3x=30-2 \text{ or } 3x=-30-2$$

$$3x=28 \text{ or } x=-32$$

$$x=\frac{28}{3} \text{ or } x=-\frac{32}{3}$$

(iii) $|2x+5|=11$

Solution:

The equation is equivalent to

$$2x+5=11 \text{ or } 2x+5=-11$$

$$2x=6 \text{ or } 2x=-16$$

$$x=3 \text{ or } x=-8$$

(iv) $|3+2x|=|6x-7|$

Solution:

The given equation is equivalent to

$$3+2x=\pm(6x-7)$$

$$\text{i.e. } 3+2x=6x-7 \quad 3+2x=-(6x-7)$$

$$\text{i.e. } 2x-6x=-7-3 \text{ or } 2x+6x=7-3$$

$$\text{i.e. } -4x=-10 \text{ or } 8x=4$$

$$\text{i.e. } x=\frac{5}{2} \text{ or } x=\frac{1}{2}$$

(v) $|x+2|-3=5-|x+2|$

Solution:

$$|x+2|+|x+2|=5+3$$

$$2|x+2|=8$$

$$|x+2|=4$$

The given equation is equivalent to

$$x+2=4 \text{ or } x+2=-4$$

$$x=2 \text{ or } x=-6$$

(vi) $\frac{1}{2}|x+3|+21=9$

Solution:

$$\frac{1}{2}|x+3|=9-21=-12$$

$$|x+3|=-6 \text{ which is not possible}$$

Since the absolute value of non-zero integer is always positive. So,

$$\text{Solution set}=\{\}$$

(vii) $\left|\frac{3-5x}{4}-\frac{1}{3}\right|=\frac{2}{3}$

Solution:

$$\left|\frac{3-5x}{4}\right|=\frac{2}{3}+\frac{1}{3}=1$$

The given equation is equivalent to

$$\left|\frac{3-5x}{4}\right|=\pm 1$$

$$3-5x=\pm 4.$$

$$\text{i.e. } 3-5x=4 \text{ or } 3-5x=-4$$

$$-5x=4 \text{ or } -5x=-4-3$$

$$-5x=1 \text{ or } -5x=-7$$

$$x=-\frac{1}{5} \text{ or } x=\frac{7}{5}$$

$$\text{Solution set}=\left\{-\frac{1}{5},\frac{7}{5}\right\}$$

(viii) $\left|\frac{x+5}{2-x}\right|=6$

Solution:

The given equation is equivalent to

$$\frac{x+5}{2-x}=\pm 6$$

$$x+5=\pm 6(2-x)$$

$$\text{i.e. } x+5=6(2-x) \text{ or } x+5=-6(2-x)$$

$$x+5=12-6x \text{ or } x+5=-12+6x$$

$$7x=7 \text{ or } -5x=-17$$

$$x=1 \text{ or } x=\frac{17}{5}$$

Exercise 7.3

Q1. Solve the following inequalities.

1. $3x+1 < 5x-4$

$3x-5x < -4-1$

Solution: $-2x < 5$

$x > 5/2$
2. $4x-10.3 \leq 21x-1.8$

$4x-21x = 1.8+10.3$

Solution: $x \geq -0.5$
3. $4-\frac{1}{2}x \geq -7+\frac{1}{4}x$

Solution:

$-\frac{3}{4}x \geq -11$

$x \leq \frac{44}{3}$
4. $x-2(5-2x) \geq 6x-3\frac{1}{2}$

Solution:

$= x-0+4x \geq 10-\frac{7}{2}$

$= 5x-6x \geq 10-\frac{7}{2}$

$= -x \geq \frac{13}{2}$

$= x \leq -6.5$
5. $\frac{3x+2}{9}-\frac{2x+1}{3} > -1$

Solution:

- $= 3x+2-3(2x+1) > -9$
- $= 3x-6x > -9-2+3$
- $= -3x > -8$
- $= x < \frac{8}{3}$
6. $3(2x+1)-2(2x+5) < 5(3x-2)$

Solution:

$6x+3-4x-10 < 15x-10$

$2x-7 < 15x-10$

$-13x < -3$

$x > \frac{3}{13}$
7. $3(x-1)-(x-2) > -2(x+4)$

Solution:

$3x-3-x+2 > -2x-8$

$2x+2x < -8+1$

$x > -\frac{7}{4}$
8. $\frac{2}{3}x+\frac{2}{3}(5x-4) > -\frac{1}{3}(8x+7)$

Solution:

$\frac{8}{3}x+\frac{10}{3}x-\frac{8}{3} > -\frac{8}{3}x-\frac{7}{3}$

Multiplying by 3

$8x+10x-8 > -8x-7$

$18x+8x > -7+8$

$26x > 1$

$x > \frac{1}{26}$

Q2. Solve the following inequalities.

- (i) $-4 < 3x+5 < 8$

Solution:

The given equality represents two inequalities

$-4 < 3x+5$

And $3x+5 < 8$

The first inequality $3x+5 < 8$

The first inequality $-4 < 3x+5$ gives

$-3x < 5+4$

$3x > -9$

$x > -\frac{9}{3}$

$x > -3$

$-3 < x \dots\dots\dots (i)$

The second inequality $3x+5 < 8$ gives

$3x < 8-5$

$3x < 3$

Or $x < 1 \dots\dots\dots (ii)$

Combining (i) and (ii), we have

$-3 < x < 1$

Solution set is $\{x | -3 < x < 1\}$
- (ii) $-5 \leq \frac{4-3x}{2} < 1$

Solution:

The given inequality represents two inequalities

$-5 \leq \frac{4-3x}{2}$

- And $\frac{4-3x}{2} < 1$

The first inequality gives

$-5 \leq \frac{4-3x}{2}$

$-10 \leq 4-3x$

$-10-4 \leq -3x$

$14 \geq 3x$

Or $\frac{14}{3} \geq x \dots\dots\dots (i)$

The second inequality gives $\frac{4-3x}{2} < 1$

$\Rightarrow 4-3x < 2$

$4-2 < 3x$

$2 < 3x$

$\Rightarrow \frac{2}{3} < x \dots\dots\dots (ii)$

Combining (i) and (ii)

$\frac{2}{3} < x \leq \frac{14}{3}$

Solution Set is $\left\{x \left| \frac{2}{3} < x \leq \frac{14}{3} \right. \right\}$
- (iii) $-6 < \frac{x-2}{4} < 6$

Solution:

This inequality is equivalent to two inequalities

$-6 < \frac{x-2}{4}$

And $\frac{x-2}{4} < 6$

- The first inequality gives

$-24 < x-2$

$\Rightarrow -24+2 < x$

$\Rightarrow -22 < x \dots\dots\dots (i)$

The second inequality gives

$x-2 < 24$

$x < 24+2$

$x < 26 \dots\dots\dots (ii)$

Combining (i) and (ii) we have

$-22 < x < 26$

Solution Set is $\{x | -22 < x < 26\}$
- (iv) $3 \geq \frac{7-x}{2} \geq 1$

Solution:

This inequality represents two inequality $3 \geq \frac{7-x}{2}$ and $\frac{7-x}{2} \geq 1$.

The first inequality gives

$6 \geq 7-x$

$\Rightarrow 6-7 \geq -x$

$\Rightarrow -1 \geq -x$

Or $1 \leq x \dots\dots\dots (i)$

The second inequality gives

$7-x \geq 2$

$-x \geq 2-7$

$\Rightarrow -x \geq -5$

Or $x \leq 5 \dots\dots\dots (ii)$

Combining (i) and (ii) we have

- $1 \leq x \leq 5$

The Solution Set is $\{x | 1 \leq x \leq 5\}$
- (v) $3x-10 \leq 5 \leq x+3$

Solution:

The inequality is equivalent to

$3x-10 \leq 5$

And $5 \leq x+3$

The first inequality gives

$3x-10 \leq 5$

$\Rightarrow 3x \leq 5+10$

Or $3x \leq 15$

Or $x \leq 5 \dots\dots\dots (i)$

The second inequality gives:

$5 < x+3$

Or $5-3 < x$

Or $2 < x \dots\dots\dots (ii)$

Combining (i) and (ii) we have

$2 < x \leq 5$

The Solution Set is $\{x | 2 < x \leq 5\}$
- (vi) $-3 \leq \frac{x-4}{-5} < 4$

Solution:

The equation is equivalent to

- $-3 \leq \frac{x-4}{-5}$

And $\frac{x-4}{-5} < 4$

The first inequality gives

$-3 \leq \frac{x-4}{-5}$

$\Rightarrow 15 \geq x-4$

Or $15+4 \geq x$

$\Rightarrow 19 \geq x$

Or $x \leq 19 \dots\dots\dots (i)$

This second inequality gives

$\frac{x-4}{-5} < 4$

Or $x-4 > -20$

$\Rightarrow x > -20+4$

Or $x > -16$

Or $-16 < x \dots\dots\dots (ii)$

Combining (i) and (ii) we have

$-16 < x \leq 19$

The Solution Set is $\{x | -16 < x \leq 19\}$
- (vii) $1-2x < 5-x \leq 25-6x$

Solution:

This inequality is equivalent to

$1-2x < 5-x$

And $5-x \leq 25-6x$

- The first inequality gives

$1-2x < 5-x$

Or $-2x+x < 5-1$

Or $-x < 4$ or $x > -4$

Or $-4 < x \dots\dots\dots (i)$

The second inequality gives

$5-x \leq 25-6x$

$\Rightarrow -x+6x \leq 25-5$

Or $5x \leq 20$

$\Rightarrow x \leq 4 \dots\dots\dots (ii)$

Combining (i) and (ii) we have

$-4 < x \leq 4$

The Solution Set is $\{x | -4 < x \leq 4\}$
- (viii) $3x-2 < 2x+1 < 4x+17$

Solution:

This is equivalent to

$3x-2 < 2x+1$

And $2x+1 < 4x+17$

The first inequality gives

$3x-2 < 2x+1$

Or $3x-2x < 1+2$

Or $x < 3$

The second inequality gives

$2x+1 < 4x+17$

$2x-4x < 17-1$

- Or $-2x > 16$

Or $2x > -16$

Or $x > -8$

Or $-8 < x \dots\dots\dots (ii)$

Combining (i) and (ii) we have

$-8 < x < 3$

Solution Set is $\{x | -8 < x < 3\}$

REVIEW EXERCISE 7

Q1. Choose the correct answer.

(1) Which of the following is the solution of the inequality $-4x \leq 11$?

- (a) -8 (b) -2
(c) -4 (d) none of these

(2) A statement involving any of the symbols $<, >, \leq$ or $\geq$ is called.....

- (a) equation (b) identity
(c) inequality (d) linear equation

(3) $X = \dots\dots\dots$ is a solution of the inequality $-2 < x < \frac{3}{2}$

- (a) -5 (b) 3
(c) 0 (d) $\frac{3}{2}$

(4) If x is no larger than 10, then

- (a) $x > 8$ (b) $x < 8$
(c) $x < 10$ (d) $x > 10$

(5) If the capacity c of an elevator is at most 1600 pound, then

- (a) $c \geq 1600$ (b) $c > 1600$
(c) $c < 1600$ (d) $c \leq 1600$

(6) $x = 0$ is a solution of the inequality

- (a) $x > 0$ (b) $3x + 5 < 0$
(c) $x + 2 < 0$ (d) $x - 2 < 0$

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ANSWERS:

- (1) b (2) c (3) c (4) b (5) c (6) d

Q2. Identify the following statements as true or false.

- (1) The equation $3x - 5 = 7 - x$ is a linear equation.
(2) The equation $x - 0.3x = 0.7x$ is an identity.
(3) The equation $-2x + 3 = 8$ is equivalent to $-2x = 11$.
(4) To eliminate fraction, we multiply each side of an equation by the LCM of denominators.
(5) $4(x+3) = x+3$ is a conditional equation.
(6) The equation $2(3x+5) = 6x+12$ is an inconsistent equation.
(7) To solve $\frac{2}{3}x = 1.2$, we should multiply each side by $\frac{2}{3}$.
(8) Equation having exactly the same solution are called equivalent equation.
(9) A solution that does not satisfy the original equation is called extraneous solution.

ANSWERS:

- (1) T (2) T (3) F (4) T (5) T (6) T (7) F
(8) T (9) T

Q3. Answer the following short question.

(1) Define linear inequality in one variable.

Solution:

A linear inequality in one variable x is an inequality in which the variable x occurs only to the first power and is of the form

$$Ax + b < 0, a \neq 0$$

Where a and b are equal real numbers.

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(2) State the trichotomy and transitive properties of inequalities.

Solution:

LAW OF TRICHOTOMYFor any $a, b \in R$, one and only of the statements is true.

$$A < b \text{ or } a = b \text{ or } a > b$$

LAW OF TRANSITY

$$\text{Let } a, b, c \in R$$

(a) If $a > b$ and $b > c$ then $a > c$ (b) If $a < b$ and $b < c$ then $a < c$

(3) The formula relating degrees Fahrenheit to degrees Celsius is

$$F = \frac{9}{5}C + 32, \text{ for what value of } C \text{ is } F < 0?$$

Solution:

$$F = \frac{9}{5}C + 32$$

$$F < 0$$

$$\Rightarrow \frac{9}{5}C + 32$$

$$9C + 160 < 0$$

$$9C < -160$$

$$C < \frac{-160}{9}$$

(4) Seven times, the sum of an integer and 12 is at least 50 and at most 60.

Write and solve the inequality that expresses this relationship.

Solution:

Let x be the integer. so according to the question

$$50 \leq 7(x+12) \leq 60$$

This is equivalent to two inequalities

$$50 \leq 7(x+12)$$

$$7(x+12) \leq 60$$

The first inequality gives

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$$50 \leq 7(x+12)$$

$$50 \leq 7x + 84$$

$$50 - 84 \leq 7x$$

$$-34 \leq 7x$$

$$-\frac{34}{7} \leq x$$

The second inequality gives

$$7(x+12) \leq 60$$

$$7x + 84 \leq 60$$

$$7x \leq 60 - 84$$

$$x \leq -\frac{24}{7}$$

From (1) and (2) we get

$$-\frac{34}{7} \leq x \leq -\frac{24}{7}$$

Q4. Solve each of the following and check for extraneous solution if any:

$$(1) \sqrt{2t+4} = \sqrt{t-1}$$

Solution:

Squaring both sides

$$2t + 4 = t - 1$$

$$2t - t = -1 - 4$$

$$t = -5$$

On checking

$$\sqrt{-10+4} = \sqrt{-5-1}$$

$$\sqrt{-6} = \sqrt{-6}$$

Since $\sqrt{-6}$ = imaginary

$$(2) \sqrt{3x-1} - 2\sqrt{8-2x} = 0$$

Solution:

$$\sqrt{3x-1} - 2\sqrt{8-2x} = 0$$

Squaring both sides

4

$$3x - 1 = 4(8 - 2x)$$

$$3x - 1 = 32 - 8x$$

$$11x = 33$$

$$x = 3$$

Q5. Solve for x .

$$(1) |3x+14| - 2 = 5x$$

Solution:

$$|3x+14| = 5x+2$$

This is equivalent to

$$3x+14 = \pm(5x+2)$$

$$3x+14 = 5x+2$$

$$3x-5x = 2-14$$

$$-2x = -12$$

$$x = 6$$

On checking we see that $x = 6$ satisfies the given equation but $x = -12$ does not satisfy the given equation. So, the solution set is $\{6\}$

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

Solution:

Multiplying both sides by 6 we get

$$2|x-3| = \frac{1}{2}|x+2|$$

Which is equivalent to

$$2(x-3) = 3(x+2)$$

$$2x-6 = 3x+6$$

$$2x-3x = 6+6$$

$$-x = -12$$

On checking $x = -12$

Q6. Solve the following inequality

$$(1) -\frac{1}{3}x + 5 \leq 1$$

5

Solution:

Multiplying by 3

$$-x + 15 \leq 3$$

$$-x \leq 3 - 15$$

$$-x \leq 3 - 15$$

$$x \geq 12$$

$$(2) -3 < \frac{1-2x}{5} < 1$$

Solution:

$$-3 < \frac{1-2x}{5}$$

$$-15 < 1 + 15$$

$$2x < 1 + 15$$

$$2x < 16$$

$$x < 8$$

$$1 - 2x < 5$$

$$-2x < 5 - 1$$

$$-2x > 4$$

$$x > -2$$

$$8 > x > -2$$

$$-2 < x < 8$$

Solution set is $\{x | 8 > x > -2\}$

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