

12-9-2024

Unit 5Ex 5.2

Q1 $\sqrt{2x} = 4$

$(\sqrt{2x})^2 = (4)^2$

$2x = 16$

$x = \frac{16}{2}$

 x_1

$x = 8$

Checking:-

$\sqrt{2x} = 4$

$\sqrt{2(8)} = 4$

$\sqrt{16} = 4$

$4 = 4 \text{ Ans.}$

Q2 $\sqrt{x-3} = 2$

$(\sqrt{x-3})^2 = (2)^2$

$x-3 = 4$

$x = 4+3$

$x = 7$

Checking:-

$\sqrt{7-3} = 2$

$\sqrt{4} = 2$

$2 = 2 \text{ Ans.}$

Q3 $\sqrt{x-5} = 3$

$(\sqrt{x-5})^2 = (3)^2$

$x-5 = 9$

$x = 9+5$

$x = 14$

Check:-

$\sqrt{14-5} = 3$

$\sqrt{9} = 3$

$3 = 3 \text{ Ans.}$

Q4 $\frac{5x+1}{4} = 0$

$5x+1 = 0$

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

Q4 $\sqrt{2x+1} = 9$

$(\sqrt{2x+1})^2 = (9)^2$

$2x+1 = 81$

$2x = 81-1$

$2x = 80$

$x = \frac{80}{2}$

 x_1

$x = 40$

Check:-

$\sqrt{2(40)+1} = 9$

$\sqrt{80+1} = 9$

$\sqrt{81} = 9$

$9 = 9 \text{ Ans.}$

Q5 $\sqrt{5x-4} = 14$
 $(\sqrt{5x-4})^2 = (14)^2$
 $5x-4 = 196$
 $5x = 196+4$
 $5x = 200$
 $x = \frac{200}{5}$
 $x = 40$

Check:-

$$\sqrt{5(40)-4} = 14$$

$$\sqrt{200-4} = 14$$

$$\sqrt{196} = 14$$

$$14 = 14 \text{ Ans}$$

Q6 $\sqrt{3x-5} = -10$

$$(\sqrt{3x-5})^2 = (-10)^2$$

$$3x-5 = 100$$

$$3x = 100+5$$

$$3x = 105$$

$$x = \frac{105}{3}$$

$$x = 35$$

Check:-

$$\sqrt{3(35)-5} = -10$$

$$\sqrt{105-5} = -10$$

$$\sqrt{100} = -10$$

$$10 \neq -10 \text{ Ans}$$

Q7 $\sqrt{y+4} - 3 = 2$

$$\sqrt{y+4} = 2+3$$

$$\sqrt{y+4} = 5$$

$$(\sqrt{y+4})^2 = (5)^2$$

$$y+4 = 25$$

$$y = 25-4$$

$$y = 21$$

Check:-

$$\sqrt{21+4} - 3 = 2$$

$$\sqrt{25} = 2+3$$

$$5 = 5 \text{ Ans}$$

Q8 $5 - \sqrt{2x-1} = 0$

$$-\sqrt{2x-1} = 0-5$$

$$\neq \sqrt{2x-1} = -5$$

$$(\sqrt{2x-1})^2 = (-5)^2$$

$$2x-1 = 25$$

$$2x = 25+1$$

$$x = \frac{26}{2}$$

$$x = 13$$

Check:-

$$5 - \sqrt{2(13)-1} = 0$$

$$-\sqrt{26-1} = 0-5$$

$$\neq \sqrt{25} = -5$$

$$5 = 5 \text{ Ans}$$

$$\text{Q9 } \sqrt{y+1} - 12 = -10$$

$$\sqrt{y+1} = -10 + 12$$

$$\sqrt{y+1} = +2$$

$$(\sqrt{y+1})^2 = (2)^2$$

$$y = 4 + 1 - 1$$

$$y = 3$$

Check:

$$\sqrt{y+1} - 12 = -10$$

$$\sqrt{3+1} - 12 = -10$$

$$\sqrt{4} = -10 + 12$$

$$\sqrt{4} = 2$$

$$2 = 2 \text{ Ans.}$$

$$\text{Q10 } \sqrt{5t-2} = \sqrt{3t+4}$$

$$(\sqrt{5t-2})^2 = (\sqrt{3t+4})^2$$

$$5t-2 = 3t+4$$

$$5t-3t = 4+2$$

$$2t = 6$$

$$t = \frac{6}{2}$$

$$t = 3$$

$$t = 3$$

Check:-

$$\sqrt{5t-2} = \sqrt{3t+4}$$

$$\sqrt{5(3)-2} = \sqrt{3(3)+4}$$

$$\sqrt{15-2} = \sqrt{9+4}$$

$$\sqrt{13} = \sqrt{13} \text{ Ans.}$$

$$\begin{aligned}
 \text{Q11 } \sqrt{9-2x} &= \sqrt{5x-12} \\
 (\sqrt{9-2x})^2 &= (\sqrt{5x-12})^2 \\
 9-2x &= 5x-12 \\
 -2x-5x &= -12-9 \\
 -7x &= -21 \\
 7x &= 21 \\
 x &= \frac{21}{7} \\
 x &= 3
 \end{aligned}$$

Checks-

$$\begin{aligned}
 \sqrt{9-2x} &= \sqrt{5x-12} \\
 \sqrt{9-2(3)} &= \sqrt{5(3)-12} \\
 \sqrt{9-6} &= \sqrt{15-12} \\
 \sqrt{3} &= \sqrt{3} \text{ Ans}
 \end{aligned}$$

$$\text{Q12 } 12 - \sqrt{y+1} = 14$$

$$-\sqrt{y+1} = 14 - 12$$

$$-\sqrt{y+1} = 2$$

$$(-\sqrt{y+1})^2 = (2)^2$$

$$y+1 = 4$$

$$y = 4 - 1$$

$$y = 3$$

Checks-

$$12 - \sqrt{y+1} = 14$$

$$12 - \sqrt{3+1} = 14$$

$$12 - \sqrt{4} = 14$$

$$12 - 2 = 14$$

$$10 \neq 14$$

$$10 \neq 14$$

$$\text{Q13 } 4\sqrt{z} + 8 = 40$$

$$4\sqrt{z} = 40 - 8$$

$$4\sqrt{z} = 32$$

$$\sqrt{z} = \frac{32}{4}$$

$$(\sqrt{z})^2 = (8)^2$$

$$z = 64$$

Check:-

$$4\sqrt{z} + 8 = 40$$

$$4\sqrt{64} + 8 = 40$$

$$4\sqrt{64} = 40 - 8$$

$$4\sqrt{64} = 32$$

$$\sqrt{64} = \frac{32}{4}$$

$$8$$

$$8 = 8 \text{ Ans}$$

$$\text{Q14 } \sqrt{\frac{a+6}{a+2}} = \sqrt{\frac{a+2}{a-1}}$$

$$\left(\sqrt{\frac{a+6}{a+2}}\right)^2 = \left(\sqrt{\frac{a+2}{a-1}}\right)^2$$

$$\frac{a+6}{a+2} = \frac{a+2}{a-1}$$

$$(a+6)(a-1) = (a+2)(a+2)$$

$$a^2 + 5a - 6 = a^2 + 4a + 4$$

$$\cancel{a^2} - \cancel{a^2} + 5a - 4a = 4 + 6$$

$$a = 10$$

Check :-

$$\sqrt{\frac{a+6}{a+2}} = \sqrt{\frac{a+2}{a-1}}$$

$$\sqrt{\frac{10+6}{10+2}} = \sqrt{\frac{10+2}{10-1}}$$

$$\sqrt{\frac{16}{12}} = \sqrt{\frac{12}{9}}$$

$$\sqrt{\frac{4}{3}} = \sqrt{\frac{4}{3}} \quad \text{Ans.}$$

$$\text{Q15 } \sqrt{\frac{z}{z+3}} = \sqrt{\frac{z+2}{z+6}}$$

$$\left(\sqrt{\frac{z}{z+3}}\right)^2 = \left(\sqrt{\frac{z+2}{z+6}}\right)^2$$

$$\frac{z}{z+3} = \frac{z+2}{z+6}$$

$$z(z+6) = (z+2)(z+3)$$

$$z^2 + 6z = z^2 + 5z + 6$$

$$\cancel{z^2} + 6z - 5z = 6$$

$$z = 6$$

Check :-

$$\sqrt{\frac{z}{z+3}} = \sqrt{\frac{z+2}{z+6}}$$

$$\sqrt{\frac{6}{6+3}} = \sqrt{\frac{6+2}{6+6}}$$

$$\sqrt{\frac{6^2}{9}} = \sqrt{\frac{8^2}{12}}$$

$$\sqrt{\frac{2}{3}} = \sqrt{\frac{2}{3}} \quad \text{Ans.}$$

Q16

$$Q16 \quad \sqrt{5x-4} = \sqrt{7x+2}$$

$$(\sqrt{5x-4})^2 = (\sqrt{7x+2})^2$$

$$5x-4 = 7x+2$$

$$5x-7x = 2+4$$

$$-2x = 6$$

$$x = \frac{6}{-2}$$

$$x = -3$$

$$x = -3$$

Check:-

$$\sqrt{5x-4} = \sqrt{7x+2}$$

$$\sqrt{5(-3)-4} = \sqrt{7(-3)+2}$$

$$\sqrt{-15-4} = \sqrt{21+2}$$

$$\sqrt{-19} = \sqrt{-19} \text{ Ans.}$$