

Square Root Equations

Solve each equation. Remember to check for extraneous solutions.

1) $3 = \sqrt{b - 1}$

2) $2 = \sqrt{\frac{x}{2}}$

3) $\sqrt{-8 - 2a} = 0$

4) $\sqrt{x + 4} = 0$

5) $5 = \sqrt{r - 3}$

6) $\sqrt{2m - 6} = \sqrt{3m - 14}$

7) $\sqrt{8k} = k$

8) $\sqrt{9 - b} = \sqrt{1 - 9b}$

9) $\sqrt{3 - 2x} = \sqrt{1 - 3x}$

10) $\sqrt{3k - 11} = \sqrt{5 - k}$

$$11) (20 - r)^{\frac{1}{2}} = r$$

$$12) (6b)^{\frac{1}{2}} = (8 - 2b)^{\frac{1}{2}}$$

$$13) \sqrt{56 - r} = r$$

$$14) \sqrt{-10 + 7p} = p$$

$$15) (18 - n)^{\frac{1}{2}} = \left(\frac{n}{8}\right)^{\frac{1}{2}}$$

$$16) \sqrt{2v - 7} = v - 3$$

$$17) -3 = (37 - 3n)^{\frac{1}{2}} - n$$

$$18) (-3 - 4x)^{\frac{1}{2}} - (-2 - 2x)^{\frac{1}{2}} = 1$$

$$19) x = 5 + (3x - 11)^{\frac{1}{2}}$$

$$20) 2 = \sqrt{3b - 2} - \sqrt{10 - b}$$

Square Root Equations

Date _____ Period _____

Solve each equation. Remember to check for extraneous solutions.

1) $3 = \sqrt{b-1}$
{10}

2) $2 = \sqrt{\frac{x}{2}}$
{8}

3) $\sqrt{-8-2a} = 0$
{-4}

4) $\sqrt{x+4} = 0$
{-4}

5) $5 = \sqrt{r-3}$
{28}

6) $\sqrt{2m-6} = \sqrt{3m-14}$
{8}

7) $\sqrt{8k} = k$
{0, 8}

8) $\sqrt{9-b} = \sqrt{1-9b}$
{-1}

9) $\sqrt{3-2x} = \sqrt{1-3x}$
{-2}

10) $\sqrt{3k-11} = \sqrt{5-k}$
{4}

$$11) (20 - r)^{\frac{1}{2}} = r$$

{4}

$$12) (6b)^{\frac{1}{2}} = (8 - 2b)^{\frac{1}{2}}$$

{1}

$$13) \sqrt{56 - r} = r$$

{7}

$$14) \sqrt{-10 + 7p} = p$$

{2, 5}

$$15) (18 - n)^{\frac{1}{2}} = \left(\frac{n}{8}\right)^{\frac{1}{2}}$$

{16}

$$16) \sqrt{2v - 7} = v - 3$$

{4}

$$17) -3 = (37 - 3n)^{\frac{1}{2}} - n$$

{7}

$$18) (-3 - 4x)^{\frac{1}{2}} - (-2 - 2x)^{\frac{1}{2}} = 1$$

{-3, -1}

$$19) x = 5 + (3x - 11)^{\frac{1}{2}}$$

{9}

$$20) 2 = \sqrt{3b - 2} - \sqrt{10 - b}$$

{6}

Michelle

Day 5 - second link

1.) $(3)^2 = (\sqrt{b-1})^2$
 $9 = b-1$
 $10 = b$

2.) $(2)^2 = \left(\sqrt{\frac{x}{2}}\right)^2$
 $4 = \frac{x}{2}$
 $8 = x$

3.) $(\sqrt{-8-2a}) = (0)^2$
 $-8-2a = 0$
 $-2a = 8$
 $a = -4$

4.) $(\sqrt{x+4}) = (0)^2$
 $x = -4$

5.) $(5)^2 = (\sqrt{r-3})^2$
 $25 = r-3$
 $28 = r$

6.) $(\sqrt{2m-6}) = (\sqrt{3m-14})^2$
 $2m-6 = 3m-14$
 $8 = m$

8.) $(\sqrt{9-b}) = (\sqrt{1-9b})^2$
 $9-b = 1-9b$
 $8 = -8b$
 $-1 = b$

7.) $(\sqrt{8k}) = (k)^2$
 $8k = k^2$

$0 = k^2 - 8k$
 $0 = k(k-8)$
 $k=0 \quad k-8=0 \quad \therefore k=8 \text{ \& } 0$

10.) $(\sqrt{3k-11}) = (\sqrt{5-k})^2$
 $3k-11 = 5-k$
 $4k = 16$
 $k = 4$

9.) $(\sqrt{3-2x}) = (\sqrt{1-3x})^2$
 $3-2x = 1-3x$
 $2 = -x$
 $-2 = x$

11.) $(\sqrt{20-r}) = (r)^2$
 $20-r = r^2$

$0 = r^2 + r - 20$
 $= (r+5)(r-4)$
 $\therefore r = 4$

check: $\sqrt{20-(-5)} = -5$
 $\sqrt{25} = -5$
 $5 = -5 \times$

$\sqrt{20-(4)} = 4$
 $\sqrt{16} = 4$
 $4 = 4 \checkmark$

12.) $\left((6b)^{\frac{1}{2}}\right)^2 = \left((8-2b)^{\frac{1}{2}}\right)^2$
 $6b = 8-2b$
 $8b = 8$
 $b = 1$

13.) $(\sqrt{56-r}) = (r)^2$
 $56-r = r^2$

$0 = r^2 + r - 56$
 $= (r+8)(r-7)$

check: $\sqrt{56-(-8)} = -8$
 $\sqrt{64} = -8$
 $8 \neq -8$

$\sqrt{56-(7)} = 7$
 $\sqrt{49} = 7 \checkmark$
 $7 = 7$

$$\begin{aligned}
 14.) \quad & (\sqrt{-10+7p})^2 = (p)^2 \\
 & -10+7p = p^2 \\
 & 0 = p^2 - 7p + 10 \\
 & = (p-5)(p-2) \\
 & \therefore p = 5 \text{ \& } 2
 \end{aligned}$$

$$15.) \quad \left[\sqrt{(18-n)} \right]^2 = \left[\left(\frac{n}{8} \right) \right]^2$$

$$18 - n = \frac{n}{8}$$

$$\begin{aligned}
 144 - 8n &= n \\
 144 &= 9n \\
 16 &= n
 \end{aligned}$$

$$\begin{aligned}
 16.) \quad & (\sqrt{2v-7})^2 = (v-3)^2 \\
 & 2v-7 = v^2 - 6v + 9 \\
 & 0 = v^2 - 8v + 16 \\
 & = (v-4)(v-4) \\
 & = (v-4)^2 \\
 & v = 4
 \end{aligned}$$

$$\begin{aligned}
 17.) \quad & -3 = (37-3n)^{\frac{1}{2}} - n \\
 & (-3+n)^2 = \left[(37-3n)^{\frac{1}{2}} \right]^2 \\
 & n^2 - 6n + 9 = 37 - 3n \\
 & n^2 - 3n - 28 = 0 \\
 & (n-7)(n+4) = 0 \quad \therefore n = 7
 \end{aligned}$$

$$\begin{aligned}
 \text{check: } & -3 = \sqrt{37-3(7)} - 7 \\
 & -3 = \sqrt{16} - 7 \\
 & -3 = -3 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 & -3 = \sqrt{37-3(-4)} - 7 \\
 & -3 = \sqrt{49} - 7 \\
 & -3 \neq 0 \quad \times
 \end{aligned}$$

$$\begin{aligned}
 18.) \quad & (-3-4x)^{\frac{1}{2}} = (-2-2x)^{\frac{1}{2}} + 1 \\
 & (-3-4x)^{\frac{1}{2}} = \left[(-2-2x)^{\frac{1}{2}} + 1 \right]^2
 \end{aligned}$$

$$-3-4x = -2-2x + 2(-2-2x)^{\frac{1}{2}} + 1$$

$$(-2-2x) = \left[2(-2-2x)^{\frac{1}{2}} \right]^2$$

$$4 + 8x + 4x^2 = 4(-2-2x)$$

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

$$4x^2 + 16x + 12 = 0$$

$$4(x^2 + 4x + 3) = 0$$

$$4(x+1)(x+3) = 0$$

$$\therefore x = -1 \text{ \& } -3$$