

Radical Equations

$$\textcircled{1} \begin{array}{r} 4 - \sqrt{x} = 3 \\ \underline{-4} \quad \underline{-4} \\ \sqrt{x} = -1 \\ \underline{-1} \quad \underline{-1} \\ (\sqrt{x})^2 = 1^2 \\ \boxed{x = 1} \end{array}$$

$$4 - \sqrt{1} = 3$$

$$3 = 3 \checkmark$$

$$\textcircled{2} (\sqrt[5]{w-7})^5 = 1^5$$

$$\begin{array}{r} w - 7 = 1 \\ \underline{+7} \quad \underline{+7} \end{array}$$

$$\boxed{w = 8}$$

$$\sqrt[5]{8-7} = 1$$

$$\sqrt[5]{1} = 1$$

$$1 = 1 \checkmark$$

$$\textcircled{3} \begin{array}{r} \sqrt[4]{y-9} + 4 = 0 \\ \underline{-4} \quad \underline{-4} \end{array}$$

$$(\sqrt[4]{y-9})^4 = (-4)^4$$

$$\begin{array}{r} y - 9 = 256 \\ \underline{+9} \quad \underline{+9} \end{array}$$

$$y = 265$$

No Real Solution

$$\sqrt[4]{265-9} + 4 = 0$$

$$\sqrt[4]{256} + 4 = 0$$

$$4 + 4 = 0$$

$$8 = 0 \times$$

$$\textcircled{4} \begin{array}{r} (6u-5)^{\frac{1}{3}} + 2 = -3 \\ \underline{-2} \quad \underline{-2} \end{array}$$

$$((6u-5)^{\frac{1}{3}})^3 = (-5)^3$$

$$\begin{array}{r} 6u - 5 = -125 \\ \underline{+5} \quad \underline{+5} \end{array}$$

$$\begin{array}{r} 6u = -120 \\ \underline{-6} \quad \underline{-6} \end{array}$$

$$\boxed{u = -20}$$

$$(6(-20)-5)^{\frac{1}{3}} + 2 = -3$$

$$(-120-5)^{\frac{1}{3}} + 2 = -3$$

$$(-125)^{\frac{1}{3}} + 2 = -3$$

$$-5 + 2 = -3$$

$$-3 = -3 \checkmark$$

$$\textcircled{5} (\sqrt{6x-4})^2 = (\sqrt{2x+10})^2$$

$$\begin{array}{r} 6x-4 = 2x+10 \\ \underline{-2x} \quad \underline{-2x} \end{array}$$

$$\begin{array}{r} 4x-4 = +10 \\ \underline{+4} \quad \underline{+4} \end{array}$$

$$4x = 14$$

$$\boxed{x = \frac{7}{2}}$$

$$\sqrt{6\left(\frac{7}{2}\right)-4} = \sqrt{2\left(\frac{7}{2}\right)+10}$$

$$\sqrt{17} = \sqrt{17} \checkmark$$

$$\textcircled{27} (\sqrt{x-15})^2 = (3-\sqrt{x})^2$$

$$x-15 = (3-\sqrt{x})(3-\sqrt{x})$$

$$x-15 = 9-3\sqrt{x}-3\sqrt{x}+x$$

$$x-15 = 9+x-6\sqrt{x}$$

$$\begin{array}{r} \underline{-x} \quad \underline{-9} \quad \underline{-9-x} \end{array}$$

$$\begin{array}{r} -24 = -6\sqrt{x} \\ \underline{-6} \quad \underline{-6} \end{array}$$

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

$$x = 16$$

$$\sqrt{16-15} = 3-\sqrt{16}$$

$$1 = 1 \times$$

No Real Solution

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