

Section 9.3 Practice

Solve and check the following equations.

$$1. (\sqrt{x})^2 = (6)^2$$

$$x = 36$$

$$\sqrt{36} = 6$$

$$6 = 6 \checkmark$$

$$2. (\sqrt{x-3})^2 = (4)^2$$

$$\begin{array}{r} x-3 = 16 \\ +3 \quad +3 \\ \hline \end{array}$$

$$x = 19$$

$$\sqrt{19-3} = 4$$

$$\sqrt{16} = 4$$

$$4 = 4 \checkmark$$

$$3. (\sqrt{2x+1})^2 = (7)^2$$

$$\begin{array}{r} 2x+1 = 49 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\begin{array}{r} 2x = 48 \\ \frac{2}{2} \quad \frac{48}{2} \\ \hline \end{array}$$

$$x = 24$$

$$\sqrt{2(24)+1} = 7$$

$$\sqrt{48+1} = 7$$

$$\sqrt{49} = 7$$

$$7 = 7 \checkmark$$

$$4. 2\sqrt{5x-3} = 8$$

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

$$\begin{array}{r} 5x-3 = 16 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\frac{5x}{5} = \frac{19}{5}$$

$$x = \frac{19}{5}$$

$$2\sqrt{5(\frac{19}{5})-3} = 8$$

$$2\sqrt{19-3} = 8$$

$$2\sqrt{16} = 8$$

$$2(4) = 8$$

$$8 = 8 \checkmark$$

$$5. (\sqrt{x-3})^2 = (\sqrt{3x+8})^2$$

$$\begin{array}{r} x-3 = 3x+8 \\ -x \quad -8 \quad -x \quad -8 \\ \hline \end{array}$$

$$\frac{-11}{2} = \frac{2x}{2}$$

$$\frac{-11}{2} = x$$

$$\sqrt{\frac{-11}{2}-3} = \sqrt{3(\frac{-11}{2})+8}$$

$$\sqrt{\frac{-17}{2}} = \sqrt{\frac{-33}{2}+8}$$

$$\sqrt{\frac{-17}{2}} = \sqrt{\frac{-17}{2}}$$

No solution
can not have a
neg. under a
radical.

$$6. (\sqrt{4x-1})^2 = (\sqrt{x+2})^2$$

$$4x-1 = x+2$$

$$\begin{array}{r} -x+1 \quad -x+1 \\ \hline \end{array}$$

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

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

$$x = 1$$

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

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

$$\sqrt{3} = \sqrt{3} \checkmark$$

$$7. (\sqrt[3]{2x-1})^3 = (\sqrt[3]{5x+7})^3$$

$$\begin{array}{r} 2x-1 = 5x+7 \\ -2x-7 \quad -2x-7 \\ \hline -8 = 3x \\ \frac{-8}{3} = x \end{array}$$

Don't have to check - OK to have a negative under a cube root

$$8. (\sqrt[3]{x+5})^3 = (\sqrt[3]{3x-8})^3$$

$$\begin{array}{r} x+5 = 3x-8 \\ -x+8 \quad -x+8 \\ \hline 13 = 2x \\ \frac{13}{2} = x \end{array}$$

Don't have to check - OK to have a negative under a cube root.