

$$* \frac{5x}{\sqrt[3]{84x^2y^5z}} \cdot \frac{\sqrt[3]{882xy^2z^2}}{\sqrt[3]{882xy^2z^2}}$$

have need

$$\begin{array}{r} 2 \overline{)84} \\ \underline{2 \overline{)42}} \\ \underline{3 \overline{)21}} \\ 7 \end{array}$$

$$\frac{5x \sqrt[3]{882xy^2z^2}}{\sqrt[3]{882xy^2z^2}}$$

~~have~~

have	need
2.2	2
3	3.3
7	7.7
xx	x
yyy	y
z	z.z

Together

$$= \frac{5x \sqrt[3]{882xy^2z^2}}{2 \cdot 3 \cdot 7 xy^2z}$$

$$= \frac{5 \sqrt[3]{882xy^2z^2}}{42y^2z}$$

Goal not accomplished

$$* \frac{3}{\sqrt{2}+4} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{2+4\sqrt{2}}$$

$$\boxed{\begin{array}{l} (x-y)(x+y) \\ x^2 - \cancel{xy} + \cancel{xy} - y^2 \end{array}}$$

$$\frac{3}{\sqrt{2}+4} \cdot \frac{\sqrt{2}-4}{\sqrt{2}-4}$$

Conjugate

$$\frac{3\sqrt{2}-12}{2-4\sqrt{2}+4\sqrt{2}-16}$$

$$= \frac{3\sqrt{2}-12}{-14}$$

$$= \frac{-3\sqrt{2}+12}{14} = \frac{12-3\sqrt{2}}{14}$$

$$\frac{-3\sqrt{2}}{-14} + \frac{-12}{-14} = \boxed{\frac{3}{14}\sqrt{2} + \frac{6}{7}} \checkmark$$

$$\ast \frac{2}{\sqrt{3}-1} \cdot \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{2\sqrt{3}+2}{3+\cancel{\sqrt{3}}-\cancel{\sqrt{3}}-1} = \frac{2\sqrt{3}+2}{2} = \boxed{\sqrt{3}+1} \checkmark$$

Section 7.6

Solving Equations

$$\begin{aligned}\sqrt{x} &= 7 \\ (\sqrt{x})^2 &= (7)^2 \\ \boxed{x = 49} \checkmark\end{aligned}$$

$$\begin{aligned}\sqrt{x-2} &= 6 \\ (\sqrt{x-2})^2 &= 6^2 \\ x-2 &= 36 \\ x &= 36+2 \\ \boxed{x = 38} \checkmark\end{aligned}$$

$$\begin{aligned}\text{check} \\ \sqrt{38-2} &= 6 \\ \sqrt{36} &= 6 \\ 6 &= 6 \checkmark\end{aligned}$$

$$\ast 2\sqrt{x-6} = -6$$

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

$$\sqrt{x-6} = -3$$

$$(\sqrt{x-6})^2 = (-3)^2$$

$$\begin{aligned}x-6 &= 9 \\ +6 & \quad -6\end{aligned}$$

$$\boxed{x = 15}$$

check

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

$$2\sqrt{15-6} = -6$$

$$2\sqrt{9} = -6$$

$$2(3) = -6$$

$$6 = -6 \quad \text{NO?}$$

No solution