Section 7.5: cont'd

Wednesday, November 27, 2013
9:45 AM

solve:

$$\sqrt{2x+5} + \sqrt{x+2} = 1$$

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

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

$$(x+2)^2 = \left(-2\sqrt{x+2}\right)^2$$

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

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

$$x^2-4 = 0$$

$$(x+2)(x-2) = 0$$

$$x = \cancel{2}, -2 \qquad \{-2\}$$

check: $x = 2$ | $x = -2$

$\sqrt{9} + \sqrt{4} = 1$ X | $\sqrt{1} + \sqrt{0} = 1$ ✓

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equations involving rational exponents

$\left(\quad ^{2/3}\right)^3 \quad (\ \ )^3$

solve:

$$\left(a^{2/3}\right)^3 = (2)^3$$

$$a^2 = 8$$

$$a = \pm\sqrt{8}$$

$$a = \pm 2\sqrt{2}$$

$$\{\pm 2\sqrt{2}\}$$

$$w^{-2/3} = 4$$

$$\frac{1}{w^{2/3}} = 4$$

$$(1)^3 = \left(4w^{2/3}\right)^3$$

$$1 = 64w^2$$

$$\frac{1}{64} = w^2$$

$$\pm\frac{1}{8} = w$$

$$\{\pm 1/8\}$$

$$w^{-3/2} = 4$$

$$\frac{1}{w^{3/2}} = 4$$

$$(1)^2 = \left(4w^{3/2}\right)^2$$

$$1 = 16w^3$$

$$\frac{1}{16} = w^3$$

$$w = \sqrt[3]{\frac{1}{16}}$$

$$= \frac{1}{\sqrt[3]{2^4}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$$

$$= \frac{\sqrt[3]{4}}{\sqrt[3]{2^6}}$$

$$= \frac{\sqrt[3]{4}}{2^2} = \frac{\sqrt[3]{4}}{4}$$

$$\frac{1}{\sqrt[3]{2^4}} = \frac{1}{2\sqrt[3]{2}}\sqrt[3]{\frac{4}{4}}$$

$$= \frac{\sqrt[3]{4}}{2 \cdot 2}$$

$$\sqrt[3]{2-w} = \sqrt[3]{2w-28}$$

$$2-w = 2w-28$$

$$30 = 3w$$

$$w = 10 \qquad \{10\}$$

check: $\sqrt[3]{-8} = \sqrt[3]{-8}$ ✓

check: $\sqrt[3]{-8} = \sqrt[3]{-8}$ ✓