

10.6  
p. 703 ex 10  $(\sqrt{7x-3})^2 = (6)^2$

$$7x - 3 = 36$$

$$\begin{array}{ccc} & +3 & +3 \end{array}$$

$$7x = 39$$

$$x = \frac{39}{7}$$

check

$$\sqrt{7\left(\frac{39}{7}\right) - 3} \stackrel{?}{=} 6$$

$$\sqrt{39 - 3} \stackrel{?}{=} 6$$

Mar 30-6:29 PM

ex 12

$$\sqrt{5k-3} + 2 = 0$$

$$\begin{array}{ccc} & -2 & -2 \end{array}$$

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

$$5k - 3 = 4$$

$$\begin{array}{ccc} & +3 & +3 \end{array}$$

$$5k = 7$$

$$k = \frac{7}{5}$$

no solution

check

$$\sqrt{5\left(\frac{7}{5}\right) - 3} + 2 \stackrel{?}{=} 0$$

$$\sqrt{7 - 3} + 2 \stackrel{?}{=} 0$$

$$2 + 2 \stackrel{?}{=} 0$$

no

Mar 30-6:37 PM

ex 14

$$\sqrt{5x+1} - 11 = 0$$

$$(\sqrt{5x+1})^2 = (11)^2$$

$$5x + 1 = 121$$

$$5x = 120$$

$$x = 24$$

Mar 30-6:41 PM

ex 18

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

$$\begin{array}{r} 4x - 2 = 3x + 5 \\ -3x \quad + 2 \quad -3x \quad + 2 \end{array}$$

$$x = 7$$

check

$$\sqrt{26} = \sqrt{26}$$

Mar 30-6:44 PM

ex 22  $(5\sqrt{4x+1})^2 = (3\sqrt{10x+25})^2$

$$25(4x+1) = 9(10x+25)$$

$$\begin{array}{r} 100x + 25 = 90x + 225 \\ -90x \quad -25 \quad -90x \quad -25 \end{array}$$

$$10x = 200$$

$$\begin{array}{l} 5\sqrt{81} = 3\sqrt{225} \\ 5 \cdot 9 = 3 \cdot 15 \\ 45 = 45 \end{array}$$

$x = 20$

Mar 30-6:47 PM

ex 28  $(\sqrt{5-x})^2 = (x+1)^2$  ←  $\left\{ \begin{array}{l} (x+1)^2 = \\ (x+1)(x+1) \end{array} \right.$

$$\begin{array}{r} 5 - x = x^2 + 2x + 1 \\ -5 \quad +x \quad \quad \quad +x \quad -5 \end{array}$$

$$0 = x^2 + 3x - 4$$

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

$$x+4=0 \text{ or } x-1=0$$

$$\begin{array}{l} \sqrt{5+4} = -4+1 \\ 3 = -3 \end{array}$$

↑  
extraneous solution

$$\begin{array}{l} \sqrt{5-1} = 1+1 \\ 2 = 2 \end{array}$$

$x = 1$

Mar 30-6:52 PM

ex 30  $\left(\sqrt{x^2 - 3x + 3}\right)^2 = (x-1)^2$   $(x-1)(x-1)$

$$\begin{array}{r} x^2 - 3x + 3 = x^2 - 2x + 1 \\ -x^2 + 2x - 1 \quad -x^2 + 2x - 1 \end{array}$$

$$-x + 2 = 0$$

$$2 = x$$

$$\sqrt{4 - 6 + 3} = 2 - 1$$

$$\sqrt{1} = 1$$

$$1 = 1$$

Mar 30-7:01 PM

ex 28  $\left(\sqrt[3]{p+5}\right)^3 = \left(\sqrt[3]{2p-4}\right)^3$

$$\begin{array}{r} p + 5 = 2p - 4 \\ -p + 4 \quad -p + 4 \end{array}$$

$$9 = p$$

$$\sqrt[3]{9+5} = \sqrt[3]{18-4}$$

Mar 30-7:05 PM

ex 44

$$\left( \sqrt[4]{z+11} \right)^4 = \left( \sqrt[4]{2z+6} \right)^4$$

$$z+11 = 2z+6$$

$$\textcircled{5} = z \quad \{ 5 \}$$

$$\sqrt[4]{16} = \sqrt[4]{16}$$

Mar 30-7:07 PM

ex 46

$$\sqrt[3]{r+1} + 1 = 0$$

$$\left( \sqrt[3]{r+1} \right)^3 = (-1)^3$$

$$r+1 = -1$$

$$r = \textcircled{-2}$$

Mar 30-7:10 PM

ex 48

$$\sqrt[4]{8z - 3} + 2 = 0$$

$$\left(\sqrt[4]{8z - 3}\right)^4 = (-2)^4$$

$$8z - 3 = 16$$

$$8z = 19$$

$$z = \frac{19}{8}$$

no solution

check

$$\sqrt[4]{8\left(\frac{19}{8}\right) - 3} + 2 \stackrel{?}{=} 0$$

$$\sqrt[4]{16} + 2 \stackrel{?}{=} 0$$

$$2 + 2 \stackrel{?}{=} 0$$

no

Mar 30-7:13 PM

ex 52

$$\sqrt{3x-2} - \frac{\sqrt{x+3}}{\sqrt{x+3}} = 1 + \sqrt{x+3}$$

$$\left(\sqrt{3x-2}\right)^2 = \left(1 + \sqrt{x+3}\right)^2$$

$$3x - 2 = 1 + \sqrt{x+3} + \sqrt{x+3} + x + 3$$

$$3x - 2 = 4 + 2\sqrt{x+3}$$

$$-x - 4 = 2\sqrt{x+3}$$

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

$$4x^2 - 24x + 36 = 4(x+3)$$

$$4x^2 - 24x + 36 = 4x + 12$$

$$-4x - 12 = -4x - 12$$

$$4x^2 - 28x + 24 = 0 \quad \div 4$$

$$x^2 - 7x + 6 = 0$$

check

$$(x-6)(x-1) = 0 \quad \sqrt{16} - \sqrt{9} \stackrel{?}{=} 1$$

$$x-6=0 \text{ or } x-1=0 \quad \sqrt{1} - \sqrt{4} \stackrel{?}{=} 1$$

$$1 - 2 \stackrel{?}{=} 1$$

x=6 ~~x=1~~

Mar 30-7:16 PM

ex 54

$$\sqrt{4x+5} - \sqrt{2x+2} = 1 + \sqrt{2x+2}$$

$$+ \sqrt{2x+2}$$

$$(\sqrt{4x+5})^2 = (1 + \sqrt{2x+2})^2 \quad (1 + \sqrt{2x+2})(1 + \sqrt{2x+2})$$

$$4x+5 = 1 + 2\sqrt{2x+2} + 2x+2$$

$$4x+5 = \cancel{3} + \cancel{2x} + 2\sqrt{2x+2} \quad (2x+2)(2x+2)$$

$$-2x - 3$$

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

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

$$4x^2 + \cancel{8x} + 4 = \cancel{8x} + 8$$

$$-8 \quad -8 \quad -8x \quad -8$$

check

$$4x^2 - 4 = 0 \quad \sqrt{1} - \sqrt{0} \stackrel{?}{=} 1$$

$$x^2 - 1 = 0$$

$$(x+1)(x-1) = 0$$

$$\downarrow \quad \downarrow$$

$$x = -1 \quad x = 1 \quad \sqrt{9} - \sqrt{4} \stackrel{?}{=} 1$$

Mar 30-7:31 PM

ex 56

$$(\sqrt{4x+7} - 4)^2 = (\sqrt{4x-1})^2$$

$$4x+7 - 8\sqrt{4x+7} + 16 = 4x-1$$

$$\cancel{4x} + 23 - 8\sqrt{4x+7} = \cancel{4x} - 1$$

$$-4x \quad -23 \quad -4x \quad -23$$

$$\frac{-8\sqrt{4x+7}}{-8} = \frac{-24}{-8}$$

$$(\sqrt{4x+7})^2 = (3)^2 \quad \text{check}$$

$$4x+7 = 9 \quad \sqrt{9} - 4 \stackrel{?}{=} \sqrt{1}$$

$$4x = 2$$

$$x = \cancel{\frac{1}{2}}$$

$$3 - 4 \stackrel{?}{=} 1$$

no solution

Mar 30-7:42 PM

ex 64  $(r)^2 = \left( \sqrt{\frac{A}{\pi}} \right)^2$  solve for A

$$r^2 = \frac{A}{\pi}$$

$$r^2 \cdot \pi = \frac{A}{\cancel{\pi}} \cdot \cancel{\pi}$$

$$\pi r^2 = A$$

Mar 30-7:50 PM

ex 66  $(V)^2 = \left( \sqrt{\frac{2k}{m}} \right)^2$  solve for m

$$m \cdot V^2 = \frac{2k}{\cancel{m}} \cdot \cancel{m}$$

$$\frac{V^2}{2k} = \frac{2\cancel{k}}{m \cdot 2\cancel{k}}$$

$$\frac{mV^2}{V^2} = \frac{2k}{V^2}$$

$$\frac{V^2}{2k} = \frac{1}{m}$$

$$m = \frac{2k}{V^2}$$

Mar 30-7:53 PM



ex 69  
solve for r

$$2\pi N = \frac{1}{2\pi} \sqrt{\frac{a}{r}} \cdot 2\pi$$

$$(2\pi N)^2 = \left(\sqrt{\frac{a}{r}}\right)^2$$

$$4\pi^2 N^2 = \frac{a}{r}$$

$$r \cdot 4\pi^2 N^2 = a$$

$$\frac{r \cdot 4\pi^2 N^2}{4\pi^2 N^2} = \frac{a}{4\pi^2 N^2}$$

$$r = \frac{a}{4\pi^2 N^2}$$

70 a  
a = 9.8  
N = 0.063  
so,  
r =  $\frac{9.8}{4\pi^2 (.063)^2}$   
r = 62.5

70 b a = 9.8 & N = .04  
then r =  $\frac{9.8}{4\pi^2 (.04)^2} = 155.1$

Mar 30-7:56 PM