

HW Review p. 732

$$\textcircled{13} (2\sqrt{x-11}) - 8 = 4 + 8$$
$$+ 8$$

$$\frac{2\sqrt{x-11}}{2} = \frac{12}{2}$$

$$(\sqrt{x-11})^2 = 6^2$$

$$x - 11 = 36 + 11$$
$$+ 11$$

$$x = 47$$

$$\textcircled{24} \left(\sqrt{11x-24} \right)^2 = x^2$$

$$\begin{aligned} 11x-24 &= x^2-11x+24 \\ -11x+24 & \end{aligned}$$

$$x^2-11x+24=0$$

$$(x-8)(x-3)$$

$$x-8=0 \quad x-3=0$$

$$\boxed{x=8 \quad x=3}$$

$$\sqrt{11(8)-24} = 8$$

$$\sqrt{88-24} = 8$$

$$\begin{aligned} \sqrt{64} &= 8 \\ 8 &= 8 \checkmark \end{aligned}$$

$$\sqrt{11(3)-24} = 3$$

$$\sqrt{33-24} = 3$$

$$\sqrt{9} = 3$$

$$3 = 3 \checkmark$$

$$\textcircled{31} \quad (\sqrt{x} + 2)^2 = (\sqrt{x-1})^2$$

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

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

$$\begin{array}{r} x + 4\sqrt{x} + 4 = x - 1 \\ -x \qquad -4 \quad -x - 4 \end{array}$$

$$\frac{4\sqrt{x}}{4} = \frac{-5}{4}$$

no solution

$$\sqrt{x} = \frac{-5}{4}$$

$$\textcircled{32} \quad (2 - \sqrt{x+1})^2 = (\sqrt{x+3})^2$$

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

$$\begin{array}{r} 4 - 2\sqrt{x+1} - 2\sqrt{x+1} + (x+1) = x + 3 \\ -4 \qquad \qquad \qquad -x - 1 \qquad \qquad -x - 4 \\ \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad -1 \end{array}$$

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

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

$$\begin{array}{r} x+1 = \frac{1}{4} - \frac{4}{4} \\ -1 \end{array}$$

$$\boxed{x = -\frac{3}{4}}$$

$$\textcircled{33} \quad \sqrt{5x+9} + \sqrt{5x} = 9 - \sqrt{5x}$$

$$(\sqrt{5x+9})^2 = (9 - \sqrt{5x})(9 - \sqrt{5x})$$

$$\begin{array}{r} 5x+9 = 81 - 9\sqrt{5x} - 9\sqrt{5x} + 5x \\ -5x \quad -81 \quad -81 \qquad \qquad \qquad -5x \end{array}$$

$$\begin{array}{r} -72 = -18\sqrt{5x} \\ \hline -18 \qquad \quad -18 \end{array}$$

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

$$\frac{16}{5} = \frac{5x}{5}$$

$$\boxed{x = \frac{16}{5}}$$

$$\textcircled{11} \sqrt{6-2x} + 12 = 21$$

-12 -12

$$(\sqrt{6-2x})^2 = 9^2$$

$$6-2x = 81$$

-6 -6

$$\frac{-2x}{-2} = \frac{75}{-2}$$

$$x = \frac{-75}{2}$$

$$\sqrt{6-2\left(\frac{-75}{2}\right)} + 12 = 21$$

$$\sqrt{6+75} + 12 = 21$$

$$\sqrt{81} + 12 = 21$$

$$9 + 12 = 21$$

$$21 = 21 \checkmark$$

$$\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$$

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

$$a\sqrt{x} + b\sqrt{x} = (a+b)\sqrt{x}$$

$$\sqrt{64x} = \sqrt{64} \cdot \sqrt{x} = 8\sqrt{x}$$

$$\sqrt{128} = \sqrt{2 \cdot 64} = \sqrt{2} \cdot \sqrt{64} = \sqrt{2} \cdot 8 \\ = 8\sqrt{2}$$

$$\sqrt{\frac{16x^2}{200}} = \frac{\sqrt{16x^2}}{\sqrt{200}} = \frac{\sqrt{16} \cdot \sqrt{x^2}}{\sqrt{2 \cdot 100}} = \frac{4x}{\sqrt{2} \cdot \sqrt{100}} =$$

$$\boxed{\frac{4x}{10\sqrt{2}}}$$

"rationalize the denominator":
get rid of radicals in the denom.

$$\frac{4x}{10\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4x\sqrt{2}}{10 \cdot 2} = \frac{4x\sqrt{2}}{20}$$

$$\textcircled{\frac{x\sqrt{2}}{5}}$$

Simplify the expression.

1. $\sqrt{200}$

$$\begin{aligned} &\sqrt{100 \cdot 2} \\ &\sqrt{100} \cdot \sqrt{2} \\ &10\sqrt{2} \end{aligned}$$

4. $\sqrt{400d}$

$$\begin{aligned} &\sqrt{400} \sqrt{d} \\ &20\sqrt{d} \end{aligned}$$

2. $\sqrt{45}$

$$\begin{aligned} &\sqrt{9 \cdot 5} \\ &\sqrt{9} \cdot \sqrt{5} \\ &3\sqrt{5} \end{aligned}$$

5. $\sqrt{9y^2}$

$$\begin{aligned} &\sqrt{9} \sqrt{y^2} \\ &3y \end{aligned}$$

$$\sqrt{14} \sqrt{8} \quad \sqrt{56} \sqrt{2}$$

3. $\sqrt{112}$

$$\begin{aligned} &\sqrt{16} \sqrt{7} \\ &4\sqrt{7} \end{aligned}$$

6. $\sqrt{25n^3}$

$$\begin{aligned} &\sqrt{25 \cdot n^2 \cdot n} \\ &\sqrt{25} \cdot \sqrt{n^2} \cdot \sqrt{n} \\ &5n\sqrt{n} \end{aligned}$$

HW p.723 3-21 (odd)
p.755 17-22 (all)