Chapter 11 Review HW — *pg755 #'s 8-15, 17-22, 24, 28, 29*

EXERCISES

Simplify the expression.

8. $\sqrt{98}$

$\sqrt{49}\sqrt{2}$

$\boxed{7\sqrt{2}}$

9. $\sqrt{121x^3}$

$\boxed{11x\sqrt{x}}$

Radicals with a variable with an odd exponent will have a hanging variable under the radical.

10. $\sqrt{7} \cdot \sqrt{21}$

$\sqrt{147} =$

$\sqrt{49}\sqrt{3} =$

$\boxed{7\sqrt{3}}$

11. $\sqrt{7x} \cdot 7\sqrt{x}$

$7\sqrt{7x^2} =$

$\boxed{7x\sqrt{7}}$

Radicals with a variable with an even exponent are perfect squares. Remove the variable by dividing the exponent by 2.

12. $\sqrt{\dfrac{5}{x^2}}$

$\boxed{\dfrac{\sqrt{5}}{x}}$

13. $\dfrac{2}{\sqrt{5}}$ $\quad \dfrac{\sqrt{5}}{\sqrt{5}} =$

$\boxed{\dfrac{2\sqrt{5}}{5}}$

No radicals in the denominators. You must rationalize the denominator

14. $3\sqrt{2} - \sqrt{128}$

$\sqrt{64}\sqrt{2}$

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

$\boxed{-5\sqrt{2}}$

Simplify both radicals
Then combine like radicals the same way you combine like variables (3x-8x=-5x)

15. $\sqrt{2}(7 - \sqrt{6}) =$

$7\sqrt{2} - \sqrt{12}$

$\sqrt{4}\,\sqrt{3}$

$= \boxed{7\sqrt{2} - 2\sqrt{3}}$

16. **GEOMETRY** The lateral surface area L of a square pyramid with height h and base length ℓ is given by $L = 2\ell\sqrt{0.25\ell^2 + h^2}$. Find L (in square feet) for a square pyramid that has a height of 4 feet and a base length of 4 feet.

$L = 2(4)\sqrt{.25(4)^2+4^2} = 8\sqrt{20} = 8\sqrt{4}\sqrt{5} = \boxed{16\sqrt{5}\text{ ft}^2}$

EXERCISES

Solve the equation. Check for extraneous solutions.

17. $\sqrt{x} - 28 = 0$

$(\sqrt{x})^2 = (28)^2$

$\boxed{x = 784}$ ✓

Remember to always check your answer(s) in the original equation. If it does NOT check then make sure to state it is an "Extraneous Solution."

18. $8\sqrt{x-5} + 34 = 58$

$\frac{8\sqrt{x-5}}{8} = \frac{24}{8}$

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

$x - 5 = 9$

$x = 14$ ✓

19. $(\sqrt{5x-3})^2 = (\sqrt{x+17})^2$

$5x - 3 = x + 17$

$4x = 20$

$\boxed{x = 5}$ ✓

20. $\sqrt{5x} + 6 = 5$

$-6 \quad -6$

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

$\frac{5x}{5} = \frac{1}{5}$

$\boxed{x = 1/5 \text{ OR } .2}$

C: $\sqrt{5(1/5)} + 6 = 5$

$1 + 6 = 5$

$7 \neq 5$

$\boxed{x = \text{NO SOL} \quad 1/5 \text{ EXTRA SOL}}$

21. $\sqrt{x} + \cancel{3}6 = 0$

$\quad -3\cancel{6} \quad -36$

$(\sqrt{x})^2 = (-36)^2$

$\boxed{\cancel{x = 1296}}$

C: $\sqrt{1296} + 36 = 0$

$72 \neq 0$

$\boxed{\begin{array}{l} x = \text{NO SOL.} \\ \text{1296 IS AN EXTRA} \\ \text{SOLUTION} \end{array}}$

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

$x^2 = 2 - x$

$x^2 + x - 2 = 0$

$(x+2)(x-1) = 0$

$x = \cancel{-2}, 1$

C: $x = 1$

$1 = \sqrt{2-1}$

$1 = 1 \checkmark$

C: $x = -2$

$-2 = \sqrt{2-(-2)}$

$-2 = \sqrt{2+2}$

$-2 \neq 2$

Answer: x=1 and -2 is an extraneous solution

24

$a = 10 \quad c = 21$

$10^2 + B^2 = 21^2$

$\sqrt{B^2} = \sqrt{441-100}$

B = √341 (the exact solution)
B ~ 18.47 (approximate solution)

28 $b = 6 \quad c = 6.5$

$a^2 + 6^2 = 6.5^2$

$\sqrt{a^2} = \sqrt{6.25}$

$\boxed{a = 2.5}$

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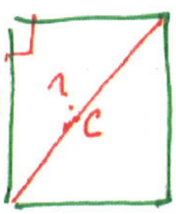
29 KI:



$l = 2029$ ft

?

c

$w = 167$ ft

$2029^2 + 167^2 = c^2$

$\sqrt{c^2} = \sqrt{4144730}$

$c \cong 2035.9$

$\boxed{\begin{array}{l} \text{The diagonal of the} \\ \text{pool is approx.} \\ \text{2,036 ft.} \end{array}}$

Chapter 11 Review HW

pg757 #'s 5-10,13,15,16

5. $\sqrt{72m^6}$ $m^3\sqrt{36}\sqrt{2}$ $\boxed{6m^3\sqrt{2}}$	**6.** $\sqrt{8z^3}\cdot\sqrt{6z^3} =$ $\sqrt{48z^6} =$ $z^3\sqrt{16}\sqrt{3} =$ $\boxed{4z^3\sqrt{3}}$
7. $\sqrt{\frac{20}{3n^3}}$ $\frac{\sqrt{20}}{\sqrt{3N^3}}\cdot\frac{\sqrt{3N^3}}{\sqrt{3N^3}} = \frac{\sqrt{60N^3}}{3N^3}$ $\frac{N\,\cancel{\sqrt{4}}^{2}\sqrt{15N}}{3N^3} = \frac{2N\sqrt{15N}}{3\cancel{N^3}_{N}2} = \boxed{\frac{2\sqrt{15N}}{3N^2}}$	**8.** $7\sqrt{6} - 2\sqrt{12} + \sqrt{24}$ $-2\sqrt{4}\sqrt{3}$ $\sqrt{4}\sqrt{6}$ $7\sqrt{6}\ -4\sqrt{3} + 2\sqrt{6}$ $\boxed{-4\sqrt{3}+9\sqrt{6}}$
9. $\sqrt{3}(7-\sqrt{15})$ $7\sqrt{3}-\sqrt{45}$ $\sqrt{9}\sqrt{5}$ $\boxed{7\sqrt{3}-3\sqrt{5}}$	**10.** $(8-\sqrt{7})(1+\sqrt{7})$ $8+8\sqrt{7}-\sqrt{7}-7=$ $\boxed{1+7\sqrt{7}}$

(13) $-4\sqrt{3x} - \cancel{6} = 30$

$\quad +\cancel{6} \quad +6$

$\dfrac{-\cancel{4}\sqrt{3x}}{-\cancel{4}} = \dfrac{36}{-4}$

$(\sqrt{3x})^2 = (-9)^2$

$3x = 81$

$\cancel{x = 27}$

C: $-4\sqrt{3 \cdot 27} - 6 = 30$

$-4(9) - 6 = 30$

$-42 \neq 30$

$\boxed{x = \text{NO SOLUTION}}$

27 is an extraneous solution

(15) $(\sqrt{x+7})^2 = (\sqrt{2x-3})^2$

$\cancel{x} + 7 = 2x - \cancel{3}$

$-\cancel{x} + 3 \quad -x \quad +3$

$10 = x$

C: $\sqrt{10+7} = \sqrt{2(10)-3}$

$\sqrt{17} = \sqrt{17}$ ✓

(16) $(x)^2 = (\sqrt{12-x})^2$

$x^2 = 12 - x$

$x^2 + x - 12 = 0$

$(x+4)(x-3) = 0$

$x+4=0 \qquad x-3=0$

$\cancel{x=-4} \qquad x=3$

C: $-4 = \sqrt{12-(-4)}$

$-4 \neq 4$

-4 is an extra sol

C: $3 = \sqrt{12-3}$

$3 = 3$ ✓

$x = 3$