

Accelerated 65-95 HW 17 (R 5.4) Operations on Radical Expressions

Name: _____

Concepts and Vocabulary:

1. $\sqrt{a} + \sqrt{a} =$ _____

2. $\sqrt[3]{b} + \sqrt[3]{b} + \sqrt[3]{b} =$ _____

3. You cannot simplify $\sqrt[3]{4} + \sqrt[3]{7}$ because they are not _____ radicals.

4. Can you simplify $4\sqrt{15} - 3\sqrt{15}$? Explain.

6. To rationalize the denominator of $\frac{2}{\sqrt{7}}$, multiply this expression by _____.

7. What is the conjugate of $\sqrt{t} - 5$?

8. To rationalize the denominator of $\frac{1}{5 - \sqrt{2}}$, multiply this expression by _____.

Addition and Subtraction of Radicals:

19. $2\sqrt{3} + 7\sqrt{3}$

21. $4\sqrt[3]{5} + 2\sqrt[3]{5}$

$$23. 7 + 4\sqrt{7}$$

$$37. \sqrt[3]{z} + \sqrt[3]{z}$$

$$25. 2\sqrt{3} + 3\sqrt{2}$$

$$39. 2\sqrt[3]{6} - 7\sqrt[3]{6}$$

$$27. \sqrt{3} + \sqrt[3]{3}$$

$$41. \sqrt[3]{y^6} - \sqrt[3]{y^3}$$

$$29. \sqrt[3]{16} + 3\sqrt[3]{2}$$

$$45. \sqrt[4]{48} + 4\sqrt[4]{3}$$

$$31. \sqrt{2} + \sqrt{18} + \sqrt{32}$$

$$47. \sqrt{9x} + \sqrt{16x}$$

49. $3\sqrt{2k} + \sqrt{8k} + \sqrt{18k}$

71. $2\sqrt[4]{64} - \sqrt[4]{324} + \sqrt[4]{4}$

63. $\sqrt{25x^3} - \sqrt{x^3}$

77. $\sqrt[4]{81a^5b^5} - \sqrt[4]{ab}$

65. $\sqrt[3]{\frac{7x}{8}} - \frac{\sqrt[3]{7x}}{3}$

Operations on Functions:

In exercises 81 and 83, find $(f + g)(x)$ and $(f - g)(x)$.

81. $f(x) = 5\sqrt{x} - 2$ and $g(x) = -2\sqrt{x} + 3$

83. $f(x) = \sqrt[3]{8x} + 1$ and $g(x) = 2\sqrt[3]{x} - 1$

Multiplying Binomials Containing Radicals:

In exercises 85 - 93, multiply and simplify.

$$85. (\sqrt{x} - 3)(\sqrt{x} + 2)$$

$$91. (\sqrt{x} + 8)(\sqrt{x} - 8)$$

$$87. (3 + \sqrt{7})(3 - \sqrt{7})$$

$$93. (\sqrt{ab} - \sqrt{c})(\sqrt{ab} + \sqrt{c})$$

Rationalizing the Denominator:

In exercises 97 - 121, rationalize the denominator.

$$97. \frac{1}{\sqrt{7}}$$

$$101. \frac{5}{3\sqrt{5}}$$

$$99. \frac{4}{\sqrt{3}}$$

$$103. \sqrt{\frac{b}{12}}$$

107. $\frac{1}{3 - \sqrt{2}}$

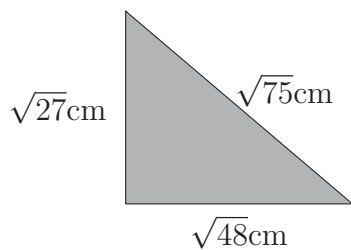
111. $\frac{\sqrt{7} - 2}{\sqrt{7} + 2}$

109. $\frac{\sqrt{2}}{\sqrt{5} + 2}$

115. $\frac{\sqrt{z}}{\sqrt{z} - 3}$

Geometry:

125. Find the exact perimeter of the right triangle. Then approximate your answer.



129. A square has a diagonal that is 60 feet long. Find the exact perimeter of the square and simplify your answer.