

Concept and Vocabulary Check:

1. The process of rewriting a radical expression as an equivalent expression in which the denominator no longer contains any radicals is called

_____.

Practice Exercises:

In exercises 1 - 23, rationalize each denominator, simplifying when and if necessary.

1. $\frac{1}{\sqrt{10}}$

13. $\sqrt{\frac{x^2}{3}}$

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

17. $\sqrt{\frac{x}{y}}$

5. $\frac{2}{\sqrt{6}}$

19. $\sqrt{\frac{x^4}{2}}$

7. $\frac{28}{\sqrt{7}}$

23. $\frac{\sqrt{3x}}{\sqrt{14}}$

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

In exercises 27 - 79, begin by simplifying the expression and *then* rationalizing the denominator.

$$27. \frac{12}{\sqrt{32}}$$

$$47. \frac{5}{\sqrt{x^3}}$$

$$35. \sqrt{\frac{1}{45}}$$

$$49. \sqrt{\frac{27}{y^3}}$$

$$39. \frac{8x}{\sqrt{8}}$$

$$51. \frac{\sqrt{50x^2}}{\sqrt{12y^3}}$$

$$43. \sqrt{\frac{7x}{12}}$$

$$75. \frac{\sqrt{36x^2y^5}}{\sqrt{2x^3y}}$$

$$45. \sqrt{\frac{45}{x}}$$

$$79. \frac{\sqrt{2}}{\sqrt{3}} + \frac{\sqrt{3}}{\sqrt{2}}$$

Applications:

83. Do you expect to pay more taxes than were withheld? Would you be surprised to know that the percentage of taxpayers who receive a refund and the percentage of taxpayers who pay more taxes vary according to age? The formula

$$P = \frac{x(13+\sqrt{x})}{5\sqrt{x}}$$

models the percentage, P , of taxpayers who are x years old who must pay more taxes.

- a. What percentage of 25-year-olds must pay more taxes?

- b. Rewrite the formula by rationalizing the denominator.

- c. Use the rationalized form of the formula from part (b) to find the percentage of 25-year-olds who must pay more taxes. Do you get the same answer as you did in part (a)? If so, does this prove that you correctly rationalized the denominator? Explain.