

Practice 7-3

Binomial Radical Expressions

Multiply each pair of conjugates.

1. $(3\sqrt{2} - 9)(3\sqrt{2} + 9)$ 2. $(1 - \sqrt{7})(1 + \sqrt{7})$ 3. $(5\sqrt{3} + \sqrt{2})(5\sqrt{3} - \sqrt{2})$

Add or subtract if possible.

4. $9\sqrt{3} + 2\sqrt{3}$ 5. $5\sqrt{2} + 2\sqrt{3}$ 6. $3\sqrt{7} - 7\sqrt[3]{x}$ 7. $14\sqrt[3]{xy} - 3\sqrt[3]{xy}$

Rationalize each denominator. Simplify the answer.

8. $\frac{2}{2\sqrt{3} - 4}$ 9. $\frac{5}{2 + \sqrt{3}}$ 10. $\frac{1 + \sqrt{5}}{1 - \sqrt{5}}$ 11. $\frac{2 + \sqrt{12}}{5 - \sqrt{12}}$

Simplify.

12. $3\sqrt{32} + 2\sqrt{50}$ 13. $\sqrt{200} - \sqrt{72}$ 14. $\sqrt[3]{81} - 3\sqrt[3]{3}$ 15. $2\sqrt[4]{48} + 3\sqrt[4]{243}$

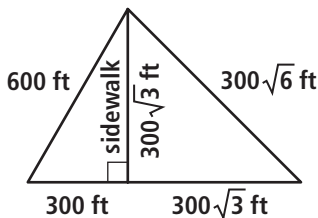
Multiply.

16. $(1 - \sqrt{5})(2 + \sqrt{5})$ 17. $(1 + 4\sqrt{10})(2 - \sqrt{10})$ 18. $(1 - 3\sqrt{7})(4 - 3\sqrt{7})$
 19. $(4 - 2\sqrt{3})^2$ 20. $(\sqrt{2} + \sqrt{7})^2$ 21. $(2\sqrt{3} + 3\sqrt{2})^2$

Simplify. Rationalize all denominators. Assume that all variables are positive.

22. $\sqrt{28} + 4\sqrt{63} - 2\sqrt{7}$ 23. $6\sqrt{40} - 2\sqrt{90} + 3\sqrt{160}$
 24. $3\sqrt{12} + 7\sqrt{75} - \sqrt{54}$ 25. $4\sqrt[3]{81} + 2\sqrt[3]{72} - 3\sqrt[3]{24}$
 26. $3\sqrt{225x} + 5\sqrt{144x}$ 27. $6\sqrt{45y^2} + 4\sqrt{20y^2}$
 28. $(3\sqrt{y} - \sqrt{5})(2\sqrt{y} + 5\sqrt{5})$ 29. $(\sqrt{x} - \sqrt{3})(\sqrt{x} + \sqrt{3})$
 30. $\frac{3 - \sqrt{10}}{\sqrt{5} - \sqrt{2}}$ 31. $\frac{2 + \sqrt{14}}{\sqrt{7} + \sqrt{2}}$ 32. $\frac{2 + \sqrt[3]{x}}{\sqrt[3]{x}}$

33. A park in the shape of a triangle has a sidewalk dividing it into two parts.



- If a man walks around the perimeter of the park, how far will he walk?
- What is the area of the park?