

6-3

Practice

Form G

Binomial Radical Expressions

Add or subtract if possible.

1. $9\sqrt{3} + 2\sqrt{3}$

2. $5\sqrt{2} + 2\sqrt{3}$

3. $3\sqrt{7} - 7\sqrt{x}$

4. $14\sqrt[3]{xy} - 3\sqrt[3]{xy}$

5. $8\sqrt[3]{x} + 2\sqrt[3]{y}$

6. $5\sqrt[3]{xy} + \sqrt[3]{xy}$

7. $\sqrt{3x} - 2\sqrt{3x}$

8. $6\sqrt{2} - 5\sqrt[3]{2}$

9. $7\sqrt{x} + x\sqrt{7}$

Simplify.

10. $3\sqrt{32} + 2\sqrt{50}$

11. $\sqrt{200} - \sqrt{72}$

12. $\sqrt[3]{81} - 3\sqrt[3]{3}$

13. $2\sqrt[4]{48} + 3\sqrt[4]{243}$

14. $3\sqrt{75} + 2\sqrt{12}$

15. $\sqrt[3]{250} - \sqrt[3]{54}$

16. $\sqrt{28} - \sqrt{63}$

17. $3\sqrt[4]{32} - 2\sqrt[4]{162}$

18. $\sqrt{125} - 2\sqrt{20}$

Multiply.

19. $(1 - \sqrt{5})(2 - \sqrt{5})$

20. $(1 + 4\sqrt{10})(2 - \sqrt{10})$

21. $(1 - 3\sqrt{7})(4 - 3\sqrt{7})$

22. $(4 - 2\sqrt{3})^2$

23. $(\sqrt{2} + \sqrt{7})^2$

24. $(2\sqrt{3} - 3\sqrt{2})^2$

25. $(4 - \sqrt{3})(2 + \sqrt{3})$

26. $(3 + \sqrt{11})(4 - \sqrt{11})$

27. $(3\sqrt{2} - 2\sqrt{3})^2$

Multiply each pair of conjugates.

28. $(3\sqrt{2} - 9)(3\sqrt{2} + 9)$

29. $(1 - \sqrt{7})(1 + \sqrt{7})$

30. $(5\sqrt{3} + \sqrt{2})(5\sqrt{3} - \sqrt{2})$

31. $(3\sqrt{2} - 2\sqrt{3})(3\sqrt{2} + 2\sqrt{3})$

32. $(\sqrt{11} + 5)(\sqrt{11} - 5)$

33. $(2\sqrt{7} + 3\sqrt{3})(2\sqrt{7} - 3\sqrt{3})$

6-3 Practice (continued)

Binomial Radical Expressions

Form G

Rationalize each denominator. Simplify the answer.

34. $\frac{3 - \sqrt{10}}{\sqrt{5} - \sqrt{2}}$

35. $\frac{2 + \sqrt{14}}{\sqrt{7} + \sqrt{2}}$

36. $\frac{2 + \sqrt[3]{x}}{\sqrt[3]{x}}$

Simplify. Assume that all the variables are positive.

37. $\sqrt{28} + 4\sqrt{63} - 2\sqrt{7}$

38. $6\sqrt{40} - 2\sqrt{90} - 3\sqrt{160}$

39. $3\sqrt{12} + 7\sqrt{75} - \sqrt{54}$

40. $4\sqrt[3]{81} + 2\sqrt[3]{72} - 3\sqrt[3]{24}$

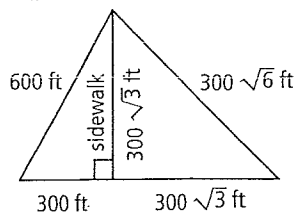
41. $3\sqrt{225x} + 5\sqrt{144x}$

42. $6\sqrt{45y^2} + 4\sqrt{20y^2}$

43. $(3\sqrt{y} - \sqrt{5})(2\sqrt{y} + 5\sqrt{5})$

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

45. 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?

46. The area of a rectangle is 10 in.^2 . The length is $(2 + \sqrt{2}) \text{ in.}$ What is the width?

47. One solution to the equation $x^2 + 2x - 2 = 0$ is $-1 + \sqrt{3}$. To show this, let $x = -1 + \sqrt{3}$ and answer each of the following questions.

- What is x^2 ?
- What is $2x$?
- Using your answers to parts (a) and (b), what is the sum $x^2 + 2x - 2$?