

6-3

Notes

Form G

Binomial Radical Expressions

Add or subtract if possible. (Like-Terms)

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

$11\sqrt{3}$

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

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

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

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

Simplify. (Create like-terms by breaking down radicals and simplifying completely.)

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

$$\begin{aligned} &3\sqrt{2 \cdot 16} + 2\sqrt{2 \cdot 25} \\ &3 \cdot 4\sqrt{2} + 2 \cdot 5\sqrt{2} \\ &12\sqrt{2} + 10\sqrt{2} = 22\sqrt{2} \end{aligned}$$

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

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

$$\begin{aligned} &\sqrt[3]{81} - 3\sqrt[3]{3} = \sqrt[3]{3 \cdot 3^3} - 3\sqrt[3]{3} \\ &3\sqrt[3]{3} - 3\sqrt[3]{3} = 0 \end{aligned}$$

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. (FOIL)

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

$$\begin{aligned} &(4 - 2\sqrt{3})(4 - 2\sqrt{3}) \\ &16 - 8\sqrt{3} - 8\sqrt{3} + 4 \cdot 3 \\ &16 - 8\sqrt{3} - 8\sqrt{3} + 12 \\ &28 - 16\sqrt{3} \end{aligned}$$

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. (Pay attention to the types of solutions yielded.)

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

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

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

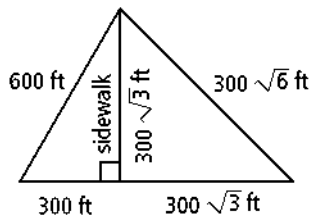
31. $(3\sqrt{2} - 2\sqrt{3})(3\sqrt{2} + 2\sqrt{3})$

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

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

$(2\sqrt{7} + 3\sqrt{3})(2\sqrt{7} - 3\sqrt{3})$
 $28 - 6\sqrt{21} + 6\sqrt{21} - 27$
 1

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



Do NOT skip word problems!!!

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

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