

Radical Practice Solutions

1. $\sqrt[3]{-27} = -3$

2. $\sqrt[4]{16} = 2$

3. $\sqrt{-81}$ is not a real number.

4. $8^{\frac{4}{3}} = \sqrt[3]{8^4} = 2^4 = 16$

5. $\sqrt{(-37)^2} = |-37| = 37$

6. $16^{\frac{3}{4}} = \sqrt[4]{16^3} = 2^3 = 8$

7. $27^{\frac{2}{3}} = \sqrt[3]{27^2} = 9$

8. $\sqrt[3]{64} = 4$

9. $\frac{\sqrt{98}}{\sqrt{2}} = \sqrt{\frac{98}{2}} = \sqrt{49} = 7$

10. $\sqrt{75} = \sqrt{25 \cdot 3} = \sqrt{25} \cdot \sqrt{3} = 5\sqrt{3}$

11. $\sqrt[3]{81} = \sqrt[3]{27 \cdot 3} = \sqrt[3]{27} \cdot \sqrt[3]{3} = 3\sqrt[3]{3}$

12. $\sqrt{48} = \sqrt{16 \cdot 3} = \sqrt{16} \cdot \sqrt{3} = 4\sqrt{3}$

13. $\sqrt{45} = \sqrt{9 \cdot 5} = \sqrt{9} \cdot \sqrt{5} = 3\sqrt{5}$

14. $\sqrt[3]{24} = \sqrt[3]{8 \cdot 3} = \sqrt[3]{8} \cdot \sqrt[3]{3} = 2\sqrt[3]{3}$

15. $\sqrt{44} = \sqrt{4 \cdot 11} = \sqrt{4} \cdot \sqrt{11} = 2\sqrt{11}$

16. $\sqrt{200} = \sqrt{100 \cdot 2} = \sqrt{100} \cdot \sqrt{2} = 10\sqrt{2}$

17. $\sqrt[3]{16x^8y^5} = \sqrt[3]{8x^6y^3 \cdot 2x^2y^2}$
 $= \sqrt[3]{8x^6y^3} \sqrt[3]{2x^2y^2}$
 $= 2x^2y \sqrt[3]{2x^2y^2}$

18. $\sqrt{8x^4y^7} = \sqrt{4x^4y^6 \cdot 2y}$
 $= \sqrt{4x^4y^6} \sqrt{2y} = 2x^2y^3 \sqrt{2y}$

19. $\sqrt{5} + \sqrt{11}$ is already simplified.

20. $\sqrt{18} + \sqrt{8} = \sqrt{9 \cdot 2} + \sqrt{4 \cdot 2} = 3\sqrt{2} + 2\sqrt{2} = 5\sqrt{2}$

21. $\sqrt{6}\sqrt{3} = \sqrt{18} = \sqrt{9 \cdot 2} = \sqrt{9} \cdot \sqrt{2} = 3\sqrt{2}$

22. $\sqrt{5}(\sqrt{5} - \sqrt{3}) = \sqrt{25} - \sqrt{15} = 5 - \sqrt{15}$

23. $(3 - \sqrt{3})(3 + \sqrt{3}) = 3^2 - \sqrt{3}^2 = 9 - 3 = 6$

24. $\frac{6}{\sqrt{3}} = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{3} = 2\sqrt{3}$

25. $\frac{7}{\sqrt[4]{27}} = \frac{7}{\sqrt[4]{3^3}} = \frac{7}{\sqrt[4]{3^3}} \cdot \frac{\sqrt[4]{3}}{\sqrt[4]{3}} = \frac{7\sqrt[4]{3}}{\sqrt[4]{3^4}} = \frac{7\sqrt[4]{3}}{3}$

26. $\frac{5}{3 - \sqrt{2}} = \frac{5}{(3 - \sqrt{2})} \cdot \frac{(3 + \sqrt{2})}{(3 + \sqrt{2})}$
 $= \frac{5(3 + \sqrt{2})}{9 - 2} = \frac{15 + 5\sqrt{2}}{7}$