

Simplify each.

1. No Calculator $9^{3/2}$ 27	2. No Calculator $8^{5/3}$ 32	3. No Calculator $(-27)^{-2/3}$ $\frac{1}{9}$
4. No Calculator $(32)^{-4/5}$ $\frac{1}{16}$	5. No Calculator $\left(\frac{1}{81}\right)^{-3/4}$ 27	6. $\left(\frac{64a^3b^6}{125y^9}\right)^{2/3}$ $\frac{16a^2b^4}{25y^6}$
7. $\left(\frac{196b^6}{100a^4}\right)^{3/2}$ $\frac{343b^9}{125a^6}$	8. $\left(\frac{16m^4}{n^8}\right)^{-3/4}$ $\frac{n^6}{8m^3}$	9. $\sqrt[3]{\left(\frac{2ac^2}{d}\right)^2\left(\frac{16d^8}{a^5c}\right)}$ $\frac{4d^2c}{a}$
10. $\sqrt[3]{135m^6n^{11}}$ $3m^2n^3\sqrt[3]{5n^2}$	11. $\sqrt[3]{\sqrt{64x^{12}y^6}}$ $2x^2y$	12. $2r\sqrt{10r}\cdot 3y\sqrt{2ry^2}$ $12r^2y^2\sqrt{5}$

13. $\sqrt[4]{6m^2n} \cdot \sqrt[4]{8m^2n^2}$

$$2m^4\sqrt[4]{3n^3}$$

14. $\sqrt[5]{81x^4y^2} \cdot \sqrt[5]{6x^2y^3}$

$$3xy^5\sqrt[5]{2x}$$

15. $\frac{\sqrt{98}}{\sqrt{16}}$

$$\frac{7\sqrt{2}}{4}$$

16. $\frac{\sqrt{2a^2b^5}}{\sqrt{3a^7b^3}}$

$$\frac{b\sqrt{6a}}{3a^3}$$

17. $\sqrt[3]{\frac{10x^2}{9y}}$

$$\frac{\sqrt[3]{30x^2y^2}}{3y}$$

18. $\frac{\sqrt[4]{176x^8y^{11}}}{\sqrt[3]{8y^3m^6}}$

$$\frac{x^2y^4\sqrt[4]{11y^3}}{m^2}$$

19. $-\sqrt[4]{32} - \sqrt[4]{162}$

$$-5\sqrt[4]{2}$$

20. $-\sqrt{50x^3y^5} - 3xy\sqrt{8xy^3}$

$$-11xy^2\sqrt{2xy}$$

21. $-2\sqrt{24b^5} + 3b\sqrt{54b^3} - 7b^2\sqrt{96b}$

$$-23b^2\sqrt{6b}$$