

Math 105 - Powers and Radicals**Name:** _____*Simplify.*

1. $\sqrt{\frac{16}{x^{-4}}}$

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

3. $(4)^{3/2}$

4. $(2^3 \cdot 3^0 \cdot 5^{-1})^2$

5. $8^{1/3} + 8^{-1/3}$

6. $\left(\frac{4x}{25}\right)^{-1/2}$

7. $(4x^3y)(-5x^2y^4)^2$

8. $\frac{50x^5y^3}{(5xy^4)^2}$

9. $\left(\frac{4xy}{8x^2}\right)^3$

10. $\sqrt{18x} \cdot \sqrt{2x^3}$

11. $\sqrt{\frac{27x^4}{y^2 + y^2 + y^2}}$

12. $\sqrt{\frac{15}{8} \cdot \frac{10}{3}}$

13. $\sqrt[3]{\frac{3p}{q}} \cdot \sqrt[3]{9p^5q}$

14. $\sqrt{80}$

15. $\sqrt[3]{4 \cdot 6 \cdot 9}$

16. $(2^{-1} + 3^{-1})^{-1}$

17. $\sqrt{3^2 + 4^2}$

18. $\left(\frac{500}{4}\right)^{1/3}$

$$19. \frac{5}{3 - \sqrt{2}} \cdot \frac{3 + \sqrt{2}}{3 + \sqrt{2}}$$

$$20. \frac{4}{1 + \sqrt{3}} \cdot \frac{1 - \sqrt{3}}{1 - \sqrt{3}}$$

$$21. \sqrt{25\sqrt{x}}$$

Evaluate.

$$22. (\sqrt{5} + \sqrt{20})^2$$

$$23. (\sqrt{50} - \sqrt{2})^2$$

Evaluate by converting the decimal to a fraction first.

$$24. \sqrt{0.16}$$

$$25. \sqrt[3]{-0.008}$$

Find the power of each factor in the expressions below. Then rewrite the expressions using those powers.

$$26. a \cdot a \cdot a \cdot \sqrt{b} \cdot c \cdot c$$

$$27. \frac{a \cdot a \cdot a \cdot a \cdot b \cdot b}{c \cdot d \cdot d}$$

Solve.

$$28. 2^{137} \cdot 2^n = \frac{1}{4}$$

$$29. (10^3)^m = 1,000,000$$

$$30. 6^x = \frac{1}{36}$$

$$31. \frac{2^{10}}{2^x} = 4$$

$$32. 4^{50} = 2^n$$

$$33. 2^{-3} = 10^{-2}x$$