

Exponent Laws

1. $a^m \cdot a^n =$

2. $(a^m)^n =$

3. $(ab)^m =$

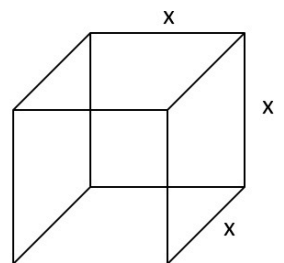
4. $a^{-m} =$

5. $\frac{a^m}{a^n} =$

6. $\left(\frac{a}{b}\right)^m =$

Radicals

A square box (with length, width and height all equal) has an area of 81 in^2 on one of its sides. What are the dimensions of the box?



A new square box (with length, width and height all equal) has a volume of 27 in^3 . What are the dimensions of the box?

Notation:

$$\sqrt{x} =$$

$$\sqrt[3]{x} =$$

$$\sqrt[N]{x} =$$

Homework

Simplify the following expressions.

1. $(x^2y^3)^2$

2. $(-x^2y^3)^2$

3. $(x^2 - y^3)^2$

4. $(2 + 3)^2 - (2^2 + 3^2)$

5. $(x + y)^2 - (x^2 + y^2)$

6. $\frac{5 \cdot 5 \cdot 5}{5 \cdot 5}$

7. $\frac{5^3}{5^2}$

8. $\frac{2^4}{2}$

9. $\frac{x^6}{x^2}$

10. $\frac{6x^3}{2x}$

11. $\frac{x^2y}{xy}$

12. $\frac{-2x^3}{2x}$

13. $\frac{(-2x)^3}{2x}$

14. $\left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right)$

15. $\left(\frac{1}{3}\right)^2$

16. $\left(\frac{-2}{3}\right)^3$

17. $\left(\frac{2x}{3}\right)^2$

18. $\frac{8x^3}{2x} \cdot \frac{3x}{4}$

19. $\left(\frac{-2x}{y}\right)^2 \cdot 2y^3$

$$20. \left(\frac{2xy}{3}\right)^2 \cdot \left(\frac{3}{x^2y}\right)^3$$

$$21. \left[\left(\frac{2x}{3}\right)^2 - \frac{2x^2}{9}\right]^2$$

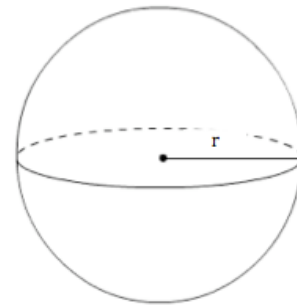
$$22. x^{1/3}$$

$$23. x^{1/5} + 2x^{1/5}$$

$$24. \frac{x}{x^{1/2}}$$

$$25. (x^{1/4})x^{1/4}$$

26. The volume of a sphere is represented by the function $V(r) = \frac{4}{3}\pi \cdot r^3$ where r is its radius. If a sphere has a volume of 80, what is its radius? Leave your answer in terms of π and then use your calculator to get a decimal answer.



27. The cost of framing a square picture at Frame4All is calculated by the function $C(x) = 0.1x^3 + 5$ where x is the length of a side of the picture. If it cost Billy \$17.50 to frame his picture, what were the dimensions of his picture?