

Bell Ringer

Wednesday 9/4

Simplify each of the following expressions by distributing.

1. $2(x+3)$

$2x+6$

2. $-y(2y+4)$

$-2y^2-4y$

3. $5-3z(z+4x)$

$-3z^2-12xz+5$

4. $ab(2b-c)$

$2ab^2-abc$

What does it mean to be a perfect square...

Perfect Squares		
$1^2 = 1$	64	225
$2^2 = 4$	81	256
$3^2 = 9$	100	289
$4^2 = 16$	121	324
25	144	400
36	169	
49	196	625

Simplify

$$\sqrt{4} = 2$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{100} = 10$$

$$\sqrt{144} = 12$$



This is a piece of cake!



Let's try it with cube roots

$$\sqrt[3]{8} = 2$$

$$2 \times 2 \times 2 = 8$$

$$\sqrt[3]{27} = 3$$

$$3 \times 3 \times 3 = 27$$

$$\sqrt[3]{125} = 5$$

$$5 \times 5 \times 5 = 125$$

$$\sqrt[4]{1,0000}$$

$$\sqrt[5]{\quad}$$

Find the side length of each cube with given volume.

a. Volume = 27 ft^3 $\sqrt[3]{27 = s^3} = s \quad s = 3 \text{ ft}$

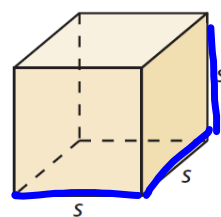
b. Volume = 125 cm^3 $\sqrt[3]{125 = s^3} = 5 \text{ cm}$

c. Volume = 3375 in^3

$\sqrt[3]{3,375} = 15 \text{ in}$

$V = s \cdot s \cdot s$

$V = s^3$



i

Put in your calculator...

$$9^{\frac{1}{2}} = 3 \quad \sqrt{9} = 3$$

What do you think those exponents mean?!

$$16^{\frac{1}{2}} = 4 \quad \sqrt{16} = 4$$

$$8^{\frac{1}{3}} = \sqrt[3]{8} = 2$$

$$27^{\frac{1}{3}} = \sqrt[3]{27} = 3$$

Exponent to Radical form!

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$4^{\frac{1}{2}}$$

$$\sqrt{4}$$

$$a^{\frac{2}{3}} = (\sqrt[3]{a})^2 = \sqrt[3]{a^2}$$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$(9x)^{\frac{2}{3}}$$

$$\sqrt[3]{(9x)^2}$$

$$(-7y)^{\frac{5}{3}}$$

$$\sqrt[3]{(-7y)^5}$$

Rewrite in Radical Form

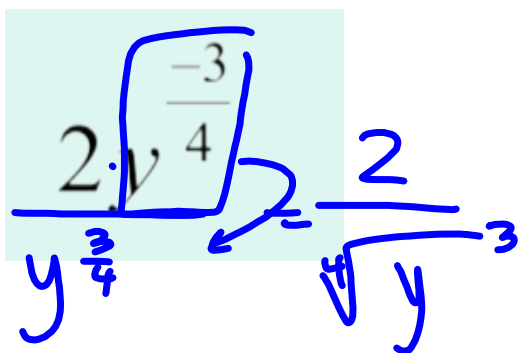
$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$4x^{(2/3)} \quad 4\sqrt[3]{x^2}$$

$$6z^{\frac{4}{7}} \quad 6\sqrt[7]{z^4}$$

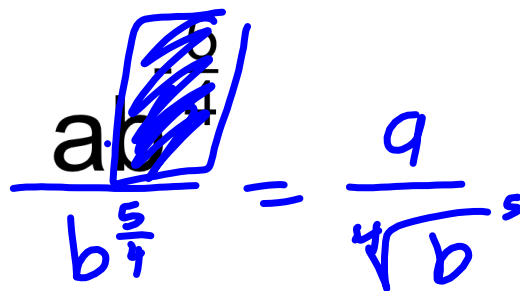
Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$



A handwritten equation showing the conversion of $y^{\frac{3}{4}}$ to radical form. The fraction $\frac{3}{4}$ is enclosed in a hand-drawn box. An arrow points from the denominator 4 to the index of a root symbol, and another arrow points from the numerator 3 to the radicand y . The resulting expression is $\sqrt[4]{y^3}$.

$$y^{\frac{3}{4}} = \sqrt[4]{y^3}$$



A handwritten equation showing the conversion of $\frac{a}{b^{\frac{5}{7}}}$ to radical form. The fraction $\frac{5}{7}$ is enclosed in a hand-drawn box. An arrow points from the denominator 7 to the index of a root symbol, and another arrow points from the numerator 5 to the radicand b . The resulting expression is $\frac{a}{\sqrt[7]{b^5}}$.

$$\frac{a}{b^{\frac{5}{7}}} = \frac{a}{\sqrt[7]{b^5}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\sqrt[2]{17} = 17^{\frac{1}{2}}$$

$$(\sqrt[5]{a})^8 = a^{\frac{8}{5}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\sqrt[5]{(2x)^2} = (2x)^{\frac{2}{5}}$$

$2^{\frac{2}{5}} \times x^{\frac{2}{5}}$

$$(\sqrt[3]{11z})^8 = 11^{\frac{8}{3}} z^{\frac{8}{3}}$$

$(11z)^{\frac{8}{3}}$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\sqrt{3y^5} = 3^{\frac{1}{2}} y^{\frac{5}{2}}$$

$(3y^5)^{\frac{1}{2}}$

$$\sqrt[4]{10x^2y^3} = 10^{\frac{1}{4}} x^{\frac{1}{2}} y^{\frac{3}{4}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\frac{1}{\sqrt{x^3}} = \frac{1}{x^{\frac{3}{2}}} = x^{-\frac{3}{2}}$$

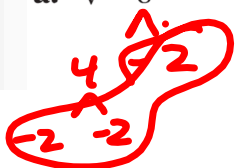
$$\frac{1}{\sqrt[3]{(5x)^2}} = \frac{1}{(5x)^{\frac{2}{3}}}$$
$$(5x)^{-\frac{2}{3}}$$

Evaluate each expression.

a. $\sqrt[3]{-8} = -2$

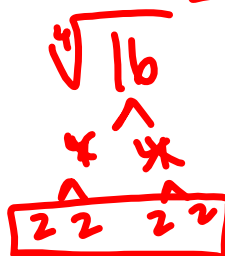
b. $-\sqrt[3]{8}$

-2

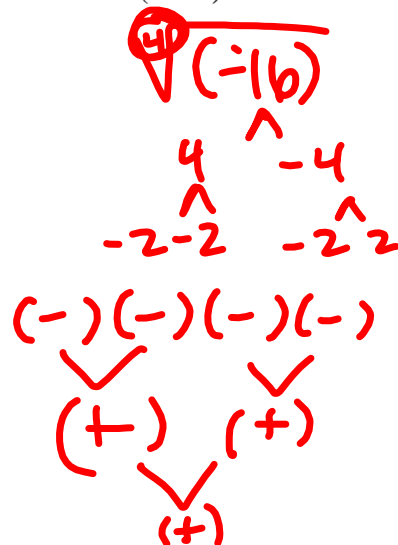


$(-16)^{1/4}$
 $\sqrt[4]{(-16)}$

c. $16^{1/4} = 2$



d. $(-16)^{1/4}$



By hand...

Evaluate (a) $16^{3/4}$ and (b) $27^{4/3}$.

$$\left(\sqrt[4]{16}\right)^3 = (2)^3 = 8$$

(Handwritten in red ink)

$$\left(\sqrt[3]{27}\right)^4 = 3^4 = 81$$

(Handwritten in blue ink)

Evaluate the expression.

Put in calculator!

3. $\sqrt[3]{-125}$
Jan - March
-5

4. $(-64)^{2/3}$
April - June
16

5. $9^{5/2}$
July - Sept
243

6. $256^{3/4}$
Oct - Dec
64

$$9 \wedge 5/2$$

Simplify

$$\left(x^{1/6}\right)^2 \cdot \sqrt[3]{y}$$

$$x^{1/3} \cdot y^{1/3}$$

$$(xy)^{1/3}$$

Simplify

$$\left(x^{1/4} \cdot y^{1/6}\right)^{12}$$

$$x^3 \cdot y^2$$

$$\left(\sqrt[3]{y}\right)^2 \cdot y^{2/3}$$

$$y^2 = x^3 y^3 = (xy)^3$$

1.5 pg 39-40 #s 1-6, 11-29 odd, 30, 35, 45, 51, 53, 57

