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1.

Convert the following numerical expressions to exponential form. The base should be the smallest possible.

a) $\sqrt{8} = 2^{\frac{3}{2}}$

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

c) $\sqrt[3]{27^4} = 3^4$

d) $-\sqrt[3]{64} = -2^2$

e) $\sqrt{243} = 3^{\frac{5}{2}}$

f) $\sqrt[3]{\frac{1}{25}} = \frac{1}{5^{\frac{2}{3}}}$

2.

Convert each of the following exponential expressions to a radical.

a) $5^{\frac{4}{3}} = \sqrt[3]{625}$

b) $a^{\frac{4}{9}} = \sqrt[9]{a^4}$

c) $-2^{\frac{8}{4}} = -\sqrt[4]{8}$

d) $x^{\frac{1}{2}} = \sqrt{x}$

3.

Convert the following expressions to exponential expressions in simplest form.

1. $4\sqrt{8} = 2^{\frac{7}{2}}$

2. $y^5 \sqrt[3]{y^{12}} = y^9$

3. $\frac{1}{25} \sqrt[3]{125} = \frac{1}{5}$

4. $a^{\frac{3}{4}} \sqrt[4]{a^5} = a^2$

5. $16 \sqrt[3]{\frac{1}{32}} = 2^{\frac{2}{3}}$

6. $5^{-\frac{3}{2}} \sqrt{25^3} = 5^{\frac{3}{2}}$

7. $\frac{1}{8^2} \sqrt[8]{16^{-6}} = \frac{1}{2^9}$

4.

Among the following expressions, which has a radicand equal to 2, a root index of 3 and a numerical coefficient of 4?

A) $2\sqrt[3]{4}$

B) $4\sqrt[3]{2}$

C) $-4\sqrt[3]{2}$

D) $4\sqrt{3}$

Answer:

5.

Write the following algebraic expressions in exponential form.

a) $\sqrt[6]{b^{12}} = b^2$

b) $\sqrt[3]{a^5} = a^{\frac{5}{3}}$

c) $\sqrt{b^8} = b^4$

d) $-\sqrt[21]{x^7} = -x^{\frac{1}{3}}$

6.

Write the following expressions in exponential form and simplify them. The base should be the smallest possible.

a) $\sqrt[3]{25} = 5^{\frac{2}{3}}$

b) $\sqrt{81} = 3^2$

c) $\sqrt[3]{8^2} = 2^2$

d) $\sqrt[5]{\frac{1}{49}} = \frac{1}{7^{\frac{2}{5}}}$

e) $-\sqrt{121^3} = -11^3$

7.

Convert the following to exponential expressions in simplest form.

a) $4\sqrt{32} = 2^{\frac{9}{2}}$

b) $x^7\sqrt[5]{x^{10}} = x^9$

c) $8\sqrt[3]{\frac{1}{16}} = 2^{\frac{5}{3}}$

d) $y^{\frac{2}{3}}\sqrt[9]{y^3} = y$

e) $\frac{1}{4}\sqrt{8^{-3}} = \frac{1}{2^{\frac{21}{2}}}$