

Radical & Rational Exponents

Simplify.

1) $(216x^9)^{\frac{1}{3}}$

2) $(81m^4)^{\frac{3}{4}}$

Write each expression in radical form.

3) $(6m^2)^{\frac{1}{3}}$

4) $(6k)^{\frac{5}{3}}$

5) $x^{\frac{7}{5}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

6) $\left(\frac{u^{\frac{3}{2}}v^{\frac{1}{3}} \cdot v^{-1}}{u^{\frac{2}{3}}}\right)^{-1}$

7) $\left(\frac{y^{-\frac{3}{4}} \cdot xy^{-1}}{xy^{\frac{1}{2}}}\right)^{-\frac{3}{2}}$

8) $\frac{y^{-1}}{x^{-1} \cdot \left(x^{\frac{3}{4}}y^{\frac{5}{3}}\right)^2}$

9) $\frac{(xx^2)^{\frac{4}{3}}}{x^{\frac{5}{3}}y^2}$

10) $\left(\frac{xy^{-1}}{x^{\frac{4}{3}}y^{\frac{5}{3}} \cdot x^{\frac{4}{3}}y^{\frac{5}{4}}}\right)^{\frac{3}{2}}$

11) $\frac{uv^{-1}}{(u^{-4})^{\frac{1}{2}} \cdot \left(u^{\frac{3}{2}}v^{\frac{3}{2}}\right)^{\frac{3}{2}}}$

12) $\frac{(x^4y^2)^{-\frac{3}{2}}}{\left(x^{-\frac{3}{2}}y^{-\frac{7}{4}}\right)^2 \cdot x^{-\frac{1}{2}}}$

13) $\frac{x^{-\frac{3}{2}}y^{\frac{3}{2}}}{yx^{-2} \cdot x^{-1} \cdot \left(x^{\frac{3}{4}}y^{-1}\right)^{\frac{1}{4}}}$

$$14) \frac{n^{-\frac{1}{2}} m^2}{\left(\frac{3}{n^2}\right)^{\frac{5}{4}}}$$

$$15) \frac{\left(a^{-\frac{4}{3}} b^{-\frac{1}{2}}\right)^{-\frac{1}{2}}}{a^{-2} b^{\frac{1}{4}} \cdot a^{\frac{5}{3}} b^{\frac{2}{3}} \cdot a^{-\frac{4}{3}} b^{\frac{1}{2}}}$$

Write each expression in exponential form.

$$16) \sqrt[3]{6n}$$

$$17) \left(\sqrt[4]{5m}\right)^5$$

$$18) \left(\sqrt[4]{3n}\right)^5$$

Answers to Radical & Rational Exponents (ID: 1)

$$1) 6x^3$$

$$5) (\sqrt[5]{x})^7$$

$$9) \frac{x^{\frac{7}{3}}}{y^2}$$

$$13) x^{\frac{21}{16}} y^{\frac{3}{4}}$$

$$17) (5m)^{\frac{5}{4}}$$

$$2) 27m^3$$

$$6) \frac{v^{\frac{2}{3}} u^{\frac{1}{6}}}{u}$$

$$10) \frac{x^{\frac{1}{2}} y^{\frac{1}{8}}}{x^3 y^6}$$

$$14) \frac{m^2 n^{\frac{5}{8}}}{n^3}$$

$$18) (3n)^{\frac{5}{4}}$$

$$3) \sqrt[3]{6m^2}$$

$$7) y^{\frac{27}{8}}$$

$$11) \frac{u^{\frac{3}{4}} v^{\frac{3}{4}}}{v^4}$$

$$15) \frac{b^{\frac{5}{6}} a^{\frac{7}{3}}}{b^2}$$

$$4) (\sqrt[3]{6k})^5$$

$$8) \frac{y^{\frac{2}{3}} x^{\frac{1}{2}}}{y^5 x}$$

$$12) \frac{y^{\frac{1}{2}} x^{\frac{1}{2}}}{x^3}$$

$$16) (6n)^{\frac{1}{3}}$$