

Write in radical form.

1) $x^{2/3} = \sqrt[3]{x^2}$

2) $x^{6/5} = \sqrt[5]{x^6}$

3) $x^{1/3} = \sqrt[3]{x}$

Write each expression in radical form.

10. $x^{1/6}$

$\sqrt[6]{x}$

11. $x^{1/5}$

$\sqrt[5]{x}$

12. $x^{2/7}$

$\sqrt[7]{x^2}$

13. $y^{2/5}$

$\sqrt[5]{y^2}$

14. $y^{-9/8}$

$\frac{1}{\sqrt[8]{x^9}}$

15. $t^{-3/4}$

$\frac{1}{\sqrt[4]{t^3}}$

16. $x^{1.5} = x^{3/2}$

$\sqrt{x^3}$

17. $y^{1.2} = y^{6/5}$

$\sqrt[5]{y^6}$

Write in exponential form.

4) $\sqrt{x^5} = x^{5/2}$

5) $\sqrt[7]{x^2} = x^{2/7}$

6) $\sqrt[3]{2x^6} = 2^{1/3} x^2$

Simplify each expression. Remember your exponent rules! (and no decimals) Leave w/ exponents

7) $\frac{12^{1/2}}{4^{3/2}} = \frac{3}{2}$

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

9) $(4m^6 n^{1/3})^{3/2} = 8m^9 n^{1/2}$

10) $\left(\frac{16a^{-3/2} b^{4/3}}{8a^{2/3} b^{1/3}} \right)^{1/3}$

11) $(m^{-2/3} n^{-1/2})^{-6/5} = m^{4/5} n^{3/5}$

12) $\left(\frac{2x^{-2}}{x^{-3/2}} \right)^{-2} = \frac{x}{4}$

$\frac{(2b)^{1/3}}{a} \text{ or } \frac{2^{1/3} b^{1/3}}{a}$

13. $(x^3)^{\frac{1}{4}}$
 $x^{\frac{3}{4}}$

14. $(16y^2)^{\frac{1}{4}}$
 $2y^{\frac{1}{2}}$

15. $(\frac{z^2}{z^{-1}})^{\frac{3}{5}}$
 $z^{\frac{9}{5}}$

16. $(\frac{25a^{\frac{4}{3}}}{5a^{\frac{2}{3}}})^3$
 $125a^2$

42. $(-27x^{-9})^{\frac{1}{3}}$
 $\frac{-3}{x^3}$

43. $(-32y^{15})^{\frac{1}{5}}$
 $-2y^3$

44. $(\frac{x^3}{x^{-1}})^{-\frac{1}{4}}$
 $\frac{1}{x}$

45. $(\frac{x^2}{x^{-11}})^{\frac{1}{3}}$
 $x^{\frac{13}{3}}$

$4 \cdot \frac{1}{4} = 1$

Example 4: What is each product or quotient in simplest form.

a) $\frac{\sqrt{x^3}}{\sqrt{x^2}} = \frac{x^{\frac{3}{4}}}{x^{\frac{2}{4}}} = \frac{x^{\frac{3}{4}}}{x^{\frac{1}{4}}} = x^{\frac{3}{4} - \frac{1}{4}} = x^{\frac{2}{4}} = x^{\frac{1}{2}} = \sqrt{x} = \sqrt{x}$

b) $\sqrt{3}(\sqrt[4]{3}) = 3^{\frac{1}{2}} \cdot 3^{\frac{1}{4}} = 3^{\frac{2}{4} + \frac{1}{4}} = 3^{\frac{3}{4}} = \sqrt[4]{3^3} =$