

Exponent Practice Worksheet

Simplify the following problems as much as possible so that your answer uses only *positive* exponents.

$$1. \frac{(kn)^{-5}}{v^2} = \frac{1}{k^5 n^5 v^2}$$

$$2. (x^2 y^3)^0 = 1$$

$$3. \frac{32^{-1}}{8^{-1}} = \frac{1}{4}$$

$$4. \frac{-3^{-2} b^2}{a^0 b^{-3}} = \frac{-b^5}{9}$$

$$5. \frac{5x^2 y^{-3}}{a^{-3} b^4} = \frac{5a^3 x^2}{b^4 y^3}$$

$$6. (2x^2 y^3)(-5x^{-2} y^7) = -10y^{10}$$

$$7. (2acd)^3(3cda) = 24a^4 c^4 d^4$$

$$8. \frac{1}{(2y^2 z)^{-3}} = \frac{8y^6 z^3}{1}$$

$$9. \left(\frac{2vq^6}{qv^3}\right)^{-2} = \frac{v^4}{4q^{10}}$$

$$10. \frac{(5a^2)(6p^3)}{(2a^3)(5^{-1}p)^{-2}} = \frac{3p^5}{5a^3}$$

$$11. \left(\frac{4x}{2x^5}\right)^3 = \frac{8}{x^{12}}$$

$$12. (-k^{-4} m^7)(3k^5 m^{-1})(2k^{-2} m) = \frac{-6m^7}{k}$$

$$13. (-zy^{-3})^2(4z^6 y^9)^{-2} = \frac{1}{16y^{24} z^{10}}$$

$$14. \frac{5^{-2} t^4 u^{-3}}{t^{-7} u^6} = \frac{t^{11}}{25u^9} \rightarrow$$

For the following problems, use what you know about *rational exponents* to simplify as much as possible and/or find the value of each root.

$$15. 4^{\frac{5}{2}} = 32$$

$$16. (-125)^{\frac{2}{3}} = 25$$

$$17. 625^{\frac{1}{5}} = \sqrt[5]{625} = 5^{4/5} \approx 3.623898$$

$$18. \left(\frac{1}{8}\right)^{\frac{1}{3}} = \frac{1}{2}$$

$$19. \left(x^{\frac{1}{4}}\right)^8 = x^2$$

$$20. (16a^4 b^{12} c^{18} d^6)^{\frac{1}{4}} = 2a b^3 c^{9/2} d^{3/2}$$

$$21. ab^{\frac{1}{2}} a^4 b^{\frac{1}{6}} = a^5 b^{2/3}$$

$$22. \frac{x^{\frac{1}{2}} y^{-2} z^4}{x^{\frac{3}{2}} y^3 z^{\frac{3}{2}}}$$

$$= x^{(\frac{1}{2}-\frac{3}{2})} y^{(-2-3)} z^{(4-\frac{3}{2})}$$

$$= \frac{z^{5/2}}{x y^5}$$