

Review 1 Exponents

Work should be done on a separate sheet of paper. No work = No credit.

Exponent Laws

$$1. c^m c^n = c^{m+n}$$

$$3. (c^m)^n = c^{mn}$$

$$5. \left(\frac{c}{d}\right)^n = \frac{c^n}{d^n}$$

$$2. \frac{c^m}{c^n} = c^{m-n}$$

$$4. (cd)^n = c^n d^n$$

$$6. c^{-n} = \frac{1}{c^n}$$

I. Use the Exponent Laws and Order of Operations to simplify the following expressions.

$$1. -\left(\frac{7}{4} + \frac{1}{3}\right)^3$$

$$3. (2x)^3(3x)(4x)^2$$

$$2. (3^{-1} - 3^2)^3$$

$$4. (2y^3)^3(3y^2)^{-2}$$

$$5. \text{Express the given number as a power of 2: } \left(\frac{1}{2}\right)^{-8} \left(\frac{1}{4}\right)^4 \left(\frac{1}{16}\right)^{-3}$$

II. Simplify and write the given expression without negative exponents.

$$6. \left(\frac{z^2}{t^3}\right)^4 \left(\frac{z^3}{t}\right)^5$$

$$8. \left(\frac{5u^2v}{2uv^2}\right)^2 \left(\frac{-3uv}{2u^2v}\right)^{-3}$$

$$7. \frac{(3x)^2(y^2)^3 x^2}{(2xy^2)^3}$$

$$9. \frac{a^{-2}}{b^{-2}} - \frac{b^2}{a^3}$$

III. For the Following, consider that r,s, and t are positive integers and a, b, and c are nonzero real numbers. Simplify and write the given expressions without negative exponents.

$$10. \frac{3^{-r}}{3^{-s-r}}$$

$$11. \frac{4^{-(t+1)}}{4^{2-t}}$$

$$12. \frac{(a^r b^{-s})^{-t}}{(b^t c^r)^{-s}}$$

IV. Give an example that shows that the statement is not always true.

$$13. a^r + b^r = (a + b)^r$$

$$14. c^{-r} = -c^r$$