Algebra 1
Review Ch. 7
Quiz 7.7 today.
Ch. 7 test is Wed.
whiteboards

Example 10

Find the next three terms in the geometric sequence 2, 6, 18, … .

54 162 486

$y = 2(3)^{n-1}$

$y = 2(3)^{14} = 9{,}565{,}938$

Example 11

Write the equation for the *n*th term of the geometric sequence −3, 12, −48, … .

$y = -3(-4)^{n-1}$

7-1 Multiplication Properties of Exponents

Simplify each expression.

11. $x \cdot x^3 \cdot x^5$

$x \; xxx \; xxxxx$

x^9

12. $(2xy)(-3x^2y^5)$

$2 \cdot -3 \; x \; y \; x \times yyyyy$

$-6x^3y^6$

17. $(2x^2)^3(x^3)^3$

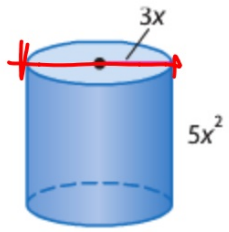
18. $\frac{1}{2}(2x^3)^3$ $= \frac{1}{2} \cdot 2xxx\ 2xxx\ 2xxx$

$4x^9$

$(2xx)(2xx)(2xx)(xxx)(xxx)(xxx)$

$8x^{15}$

19. **GEOMETRY** Use the formula $V = \pi r^2 h$ to find the volume of the cylinder.



$V = \pi (3x)(3x)(5xx)$

$= \pi 45 x^4$

$= 45\pi x^4$

7-2 Division Properties of Exponents

Simplify each expression. Assume that no denominator equals zero.

20. $\frac{(3x)^0}{2a}$ $\frac{1}{2a}$

21. $\left(\frac{3xy^3}{2z}\right)^3$ $\frac{3xyyy}{2z}$ $\frac{3xyyy}{2z}$ $\frac{3xyyy}{2z}$

$\frac{27x^3y^9}{8z^3}$

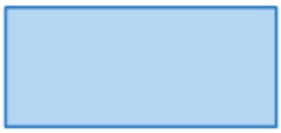
26. $\left(\frac{6xy^{11}z^{9}}{48x^{6}y^{-7}}\right)^{2}$

27. $\left(\frac{12}{2}\right)\left(\frac{x}{y^{5}}\right)\left(\frac{y^{4}}{x^{4}}\right)$ $\quad \frac{12xyyyy}{2yyyyyxxx} = \frac{6}{yx^{3}}$

$$\left(\frac{6xy^{11}z^{9}}{48x^{6}y^{7}}\right)\left(\frac{6xy^{10}z^{9}}{48x^{6}y^{7}}\right)$$

$$\frac{36y^{20}z^{32}}{2304x^{10}}$$

28. GEOMETRY The area of a rectangle is $25x^2y^4$ square feet. The width of the rectangle is $5xy$ feet. What is the length of the rectangle?



$$?(5xy) = 25x^2y^4$$

$$? = \frac{25x^2y^4}{5xy} = 5xy^3$$

7-3 Rational Exponents

Simplify.

29. $\sqrt[3]{343}$ $= 7$

$(343)^{\frac{1}{3}}$

30. $\sqrt[6]{729}$ $= 3$

$(729)^{\frac{1}{6}}$

33. $256^{\frac{3}{4}}$

$\sqrt[4]{256^3} = 64$

$\sqrt[4]{16777216}$

$\left(\sqrt[4]{256}\right)^3$

4^3

34. $32^{\frac{2}{5}}$

$\left(\sqrt[5]{32}\right)^2$

$2^2 = 4$

Try to write each term using the same base.

Solve each equation.

37. $6^x = 7776$

$6^x = 6^5$

$x = 5$

38. $4^{4x-1} = 32$

$(2^2)^{4x-1} = (2)^5$

$8x - 2 = 5$

$+2 \quad +2$

$8x = 7$

$x = \frac{7}{8}$

7-4 Scientific Notation

Express each number in scientific notation.

39. 2,300,000 $+6$ -6 2.3×10^{6}

40. 0.0000543 $+5$ -5 5.43×10^{-5}

Express each number in standard form.

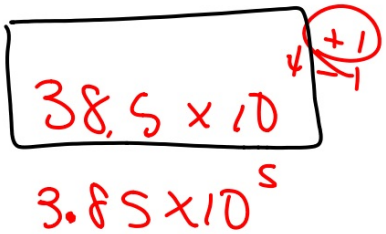
20. 2.9×10^{-5}

21. 9.1×10^{6}

Evaluate each product or quotient. Express the results in scientific notation.

22. $(2.5 \times 10^3)(3 \times 10^4)$

23. $\dfrac{8.8 \times 10^2}{4 \times 10^{-4}}$



3.85×10^5

Note: correct scientific notation format ...

Example 8

Graph $y = 3^x + 6$. Find the y-intercept, and state the domain and range.

Example 9

Find the final value of $2000 invested at an interest rate of 3% compounded quarterly for 8 years.