Algebra 1
Review Ch. 7
Quiz 7.7-7.8 Wed.
Ch. 7 test is Thurs.
whiteboards?

Example 10

Find the next three terms in the geometric sequence 2, 6, 18, … . 54, 162, 486

$a_n = 3a_{n-1}$

$a_1 = 2$

$n \geq 2$

1	2
2	6
3	18
4	54

$y = a_1(r)^{n-1}$

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

Example 11

Write the equation for the *n*th term of the geometric sequence −3, 12, −48, … 192, −768, 3072

$a_n = -4a_{n-1}$

$a_1 = -3$

$n \geq 2$

$y = a_1(r)^{n-1}$

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

Example 12

Write a recursive formula for 3, 1, −1, −3, ….

$a_n = a_{n-1} - 2$

$a_1 = 3$

$n \geq 2$

1	3
2	1
3	−1
4	−3

$y = a_1 + (n-1)(d)$

$y = 3 + (n-1)(-2)$

$= 3 - 2n + 2$

$y = -2n + 5$

7-1 Multiplication Properties of Exponents

Simplify each expression.

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

x^9

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

$2 \cdot x \cdot y \cdot -3 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y$

$-6x^3y^6$

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

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

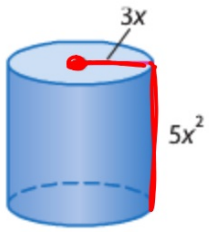
$(2\times\times)(2\times\times)(2\times\times)(1\times\times\times)(1\times\times\times)(1\times\times\times)$

$8x^{15}$

$\frac{1}{2}(2\times\times\times)(2\times\times\times)(2\times\times\times)$

$4x^9$

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



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

$45\pi x^4$

$\pi \cdot 45$

7-2 Division Properties of Exponents

Simplify each expression. Assume that no denominator equals zero.

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

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

$\frac{1}{2a}$

$\left(\frac{3xyyy}{2z}\right)\left(\frac{3xyyy}{2z}\right)\left(\frac{3xyyy}{2z}\right)$ $\frac{27x^3y^9}{8z^3}$

26. $\left(\frac{6xy^{11}z^{9}}{48x^{6}yz^{-7}}\right)^{0}$

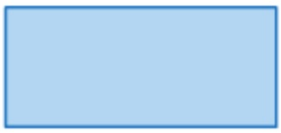
$= 1$

27. $\left(\frac{12}{2}\right)\left(\frac{x}{y^{5}}\right)\left(\frac{y^{4}}{x^{4}}\right)$

$$\frac{12 \cancel{x} \cancel{y} \cancel{y} \cancel{y} \cancel{y}}{2 \cancel{y} \cancel{y} \cancel{y} \cancel{y} \cancel{y} \cancel{x} \cancel{x} \cancel{x} \cancel{x}}$$

$$\frac{6}{x^{3}y} = 6x^{-3}y^{-1}$$

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?



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

$$5xy^3$$

7-3 Rational Exponents

Simplify.

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

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

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

$?^4 = 256$

$\sqrt[4]{256}$

$(4)^3$

64

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

$\sqrt[5]{32}$

$(2)^2$

4

Try to write each term using the same base.

Solve each equation.

37. $6^x = 7776$

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

$6^x = 6^5$

$x = 5$

$4^{4x-1} = 4^{2.5}$

$4x - 1 = 2.5$

$+1 \quad +1$

$\frac{4x}{4} = \frac{3.5}{4}$

$x = .875$

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

$8x - 2 = 5$

$+2 \quad +2$

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

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

7-4 Scientific Notation

Express each number in scientific notation.

39. 2,300,000 $+6$

40. 0.0000543 $+5$

2.3×10^{6}

5.43×10^{-5}

Express each number in standard form.

20. 2.9×10^{-5} .00002.9

21. 9.1×10^{6}

9,100,000

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

22. $(2.5 \times 10^3)(3 \times 10^4)$ 22.5 × 10^7 +1 −1

23. $\frac{8.8 \times 10^2}{4 \times 10^{-4}}$ 2.25 × 10^8

Note: correct scientific notation format ...

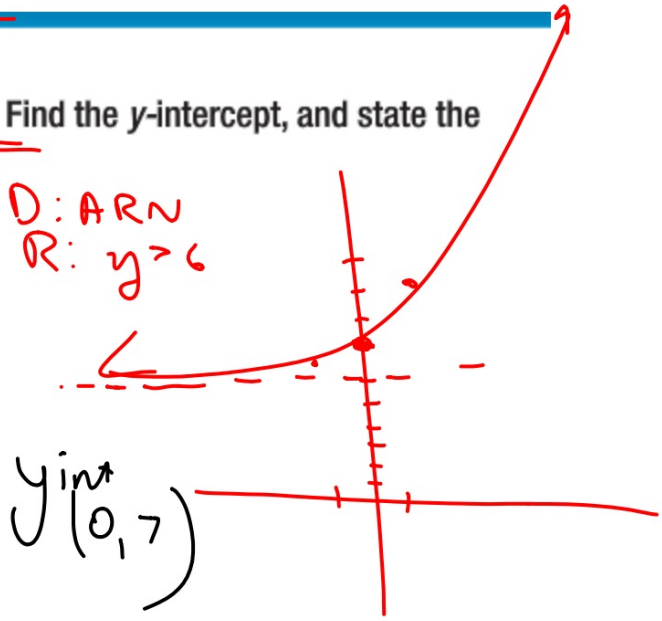
Example 8

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

$3^x + 6$	
0	$1 + 6 = 7$
1	$3 + 6 = 9$
-1	$\frac{1}{3} + 6 = 6\frac{1}{3}$

D: ARN

R: $y > 6$



Example 9

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

$$y = A\left(1 + \frac{0.03}{4}\right)^{4 \cdot 8}$$

$$2000\left(1 + \frac{.03}{4}\right)^{32}$$

$$y = A(1 \pm r)^t$$