Algebra 1 Name _____

Review - Chapter 7

Date _____

Simplify

1) $\left(\frac{4}{5}b^2\right)^3$ $\frac{64b^6}{125}$

2) $3^{2x+4} \cdot 3^{x-1}$ $3^{2x+4+x-1}$ 3^{3x+3}

3) $\frac{(-3ab^{-2})^{-3}}{12a^{-4}b^0}$ $\frac{(-3)^{-3}a^{-3}b^6}{12a^{-4}} = \frac{b^6a^4}{(-3)^3a^3 \cdot 12}$ $\frac{b^6a}{(-27)(12)}$ $-\frac{b^6a}{324}$

4) $-\frac{4x^3y^{-4}}{12x^2y^{-6}} \cdot \left(-\frac{3y}{2x^{-4}}\right)^{-2}$ $-\frac{xy^6}{3y^4} \cdot \frac{3^{-2}y^{-2}}{2^{-2}x^8}$ $= \frac{-xy^2 \cdot 4}{27y^2x^8}$ $-\frac{4}{27x^7}$

$\frac{-xy^2}{3} \cdot \frac{2^2}{3^2y^2x^8}$

Write in Scientific notation

5) 2841 2.841×10^3

6) 0.0046 4.6×10^{-3}

Evaluate. Express results in both Scientific and standard form (No calculators)

7) $(1.2 \times 10^3)(6 \times 10^{-2})$

$(1.2)(6) \times 10^{3+-2}$ 7.2×10^1 and 72

8) $\frac{350 \cdot 10^6}{7 \cdot 10^2}$ $\left(\frac{350}{7}\right) \times 10^{6-2}$

50×10^4 5.0×10^5 and 500,000

9) A red box weighed 3.85×10^8 pounds. A blue box weighed 5×10^4 pounds. How many times heavier is the Red Box?

$\frac{3.85 \times 10^8}{5 \times 10^4}$ $\left(\frac{3.85}{5}\right) \times 10^{8-4} = 0.77 \times 10^4 = 7.7 \times 10^3$

7,770 Times heavier.

Simplify

10) $81^{\frac{3}{4}}$ $\left(\sqrt[4]{81}\right)^3$ $(3)^3 = 27$

11) $8^{\frac{2}{3}}$ $\left(\sqrt[3]{8}\right)^2$ $(2)^2 = 4$

12) $125^{\frac{2}{3}}$ $\left(\sqrt[3]{125}\right)^2 = 5^2 = 25$

13) $27^{\frac{5}{3}}$ $\left(\sqrt[3]{27}\right)^5 = 3^5 = 243$

81_3

24^3

Write each expression in Simplest Radical form

14) $14^{\frac{1}{2}}$ $\sqrt{14}$

15) $4x^{\frac{3}{4}}$ $\left(\sqrt[4]{4x}\right)^3$

16) $(2ab)^{\frac{1}{6}}$ $\sqrt[6]{2ab}$

17) $\sqrt[4]{7^5 \cdot y^8 z^6}$

$\sqrt[4]{7777 \cdot yyyy zzzz}$

$7 \quad yyyy \quad zz$

$7y^2z\sqrt[4]{7z^2}$

18) $\sqrt[3]{8^2 \cdot b^3 \cdot cd^6}$

$bd^2\sqrt[3]{64c}$

19) $\sqrt{5^3}$

$5\sqrt{5}$

Write as whole number base with rational exponent

20) $\sqrt{5}$

$5^{1/2}$

21) $\sqrt[4]{7^5 \cdot y^8 z^6}$

$7^{5/4} y^2 z^{3/2}$

22) $\sqrt{50x^2y^3}$

$5xy\sqrt{2y}$

23) $\sqrt[5]{12x^2x^{25}}$

$12^{1/5}x^{\frac{27}{5}}$

Find the value of each expression

24) $(\sqrt{10})^4$

10×10

100

25) $\sqrt[9]{10^{27}}$

$10^{\frac{27}{9}} = 10^3 = 1000$

26) $\sqrt{1207428^2}$

1207428

27) $\sqrt{3^4}$

$\sqrt{3 \cdot 3}\sqrt{3 \cdot 3}$

9

Solve each equation

28) $2^{3x+4} = 256$

$2^{3x+4} = 2^8$

$3x + 4 = 8$

$3x = 4$

$x = 4/3$

29) $81^{2x+5} = 3$

$3^{4(2x+5)} = 3^1$

$8x + 20 = 1$

$8x = -19$

$x = -19/8$

More Review – Chapter 7 – Exponents

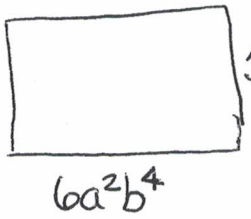
Find the Area (Express as a Monomial)

① 

$A = \frac{1}{2}bh$

$= \frac{(3b^2d^3)(4b^3d^2)}{2}$

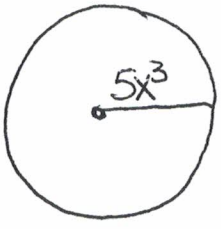
$6b^5d^7$

② 

$A = bh$

$= 3ab^2(6a^2b^4)$

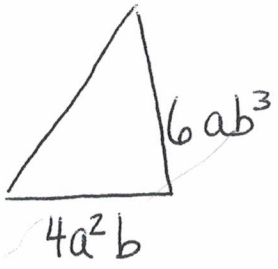
$= 18a^3b^6$

③ 

$A = \pi r^2$

$= \pi(5x^3)^2$

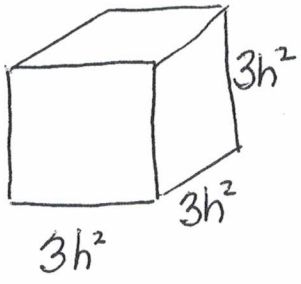
$= 25x^6\pi$ $25\pi x^6$

④ 

$A = \frac{1}{2}bh$

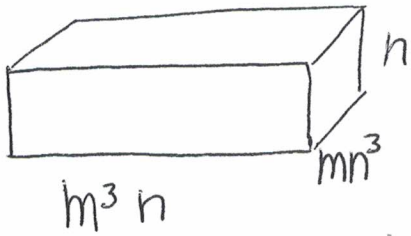
$= 12a^3b^4$

Find the Volume (Express as a monomial)

⑤ 

$V = s^3$

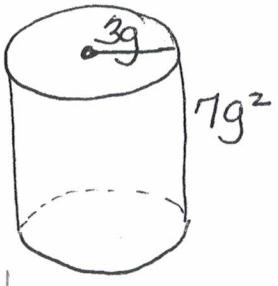
$= 27h^6$

⑥ 

$V = w \times L \times h =$

$(m^3n)(n)(mn^3)$

m^4n^5

⑦ 

$V = \pi r^2 h$

$= (9g^2)(7g^2)\pi$

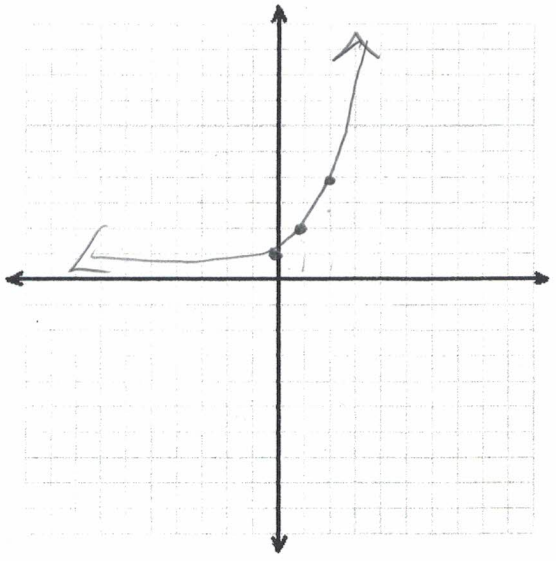
$63g^4\pi$ $63\pi g^4$

Algebra: Review for Part 2 Chapter 7 Test - with calculator

I. Graphing exponential functions

Graph the exponential functions. State the y intercept and state the domain and range. DON'T FORGET TO MAKE A TABLE OF VALUES!

1. $y=2^x$



x	y
(0,	1)
(1,	2

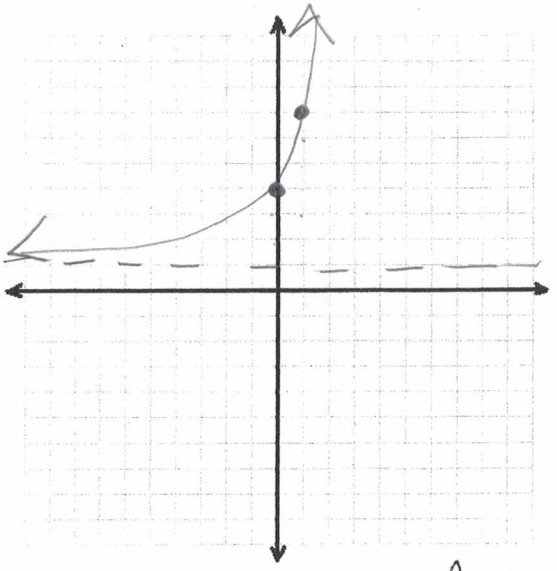
y intercept 1

domain $(-\infty, \infty)$

Rang $(0, \infty)$

2. $y=3(2^x+1)$ Use transformation Chart

$y = 3 \cdot 2^x + 1$



Parent function $y = 2^x$ growth or decay

Asymptote: $y = 1$

Chart $(x, 2^x)$	stretch by factor of 3, Mult y by 3	Move up 1 add 1 to y
(0, 1)	(0, 3)	(0, 4)
(1, 2)	(1, 6)	(1, 7)

Anchor Points: (0,4) (1,7)

domain: $(-\infty, \infty)$

Range $(1, \infty)$

II. Exponential Growth and Decay: $y=ab^x$ a is original value, b is growth factor, x is time period

Growth: increases (1+rate) Decay: decreases (1-rate)

1. The population of bacteria in a petri dish increases according to the model $p=550(2.7)^{0.008t}$, where t is the number of hours and t=0 corresponds to 1:00pm. Use this model to estimate the number of bacteria in the dish at 5:00pm 4 hours

$p=550(2.7)^{0.008(4)}$ 567.762 bacteria

2. Find the value of $2500 invested at an interest rate of 2% compounded monthly for 10 years.

$n=12$

$A=P\left(1+\frac{r}{n}\right)^{nt} = 2500\left(1+\frac{.02}{12}\right)^{12\cdot 10}$

$3052.998585

Rounds to $3053.00

3. Zita's computer is depreciating at a rate of 3% per year. She bought the computer for $1200.

a. Write an equation to represent the situation. → decay $y=a(1-r)^t$

$y=1200(1-0.03)^t$

b. what will the computer's value be after 5 years?

$y=1200(1-0.03)^5$ $1030.48

III. Geometric Sequences (Find the common ratio) formula is $a_n=a_1\cdot r^{n-1}$ ← Use

Write the equation for the nth term of each geometric sequence. Then find the 14th Term.

1. -1, 1, -1, 1, . . . $r=-1$ $a_n=-1\cdot(-1)^{n-1}$ → $a_{14}=-1\cdot(-1)^{13}$ $=1$

(x-1 x-1)

2. 3,9,27, . . . $r=3$ $a_n=3\cdot 3^{n-1}$ $a_{14}=3\cdot 3^{13}$ $=4,782,969$

3. 256, 128, 65, . . . $r=1/2$ $a_n=256\cdot\frac{1}{2}^{n-1}$ $a_{14}=256\cdot\frac{1}{2}^{13}$ $=0.3125$