Review for Benchmark 3

ACE.1 - exponential word problems that you solve

$$y = a \cdot b^x$$

During normal breathing, about 12% of the air in the lungs is replaced after one breath. If the initial amount of air in the lungs is 500 mL, how much is left after 5 x breaths?

$$y = 500(1 - .12)^x$$
$$500(.88)^5$$
$$\boxed{263.9 \, mL}$$

Apr 17-7:58 AM

ACE.1 - exponential word problems that you solve

There were about 600 million computers in use worldwide in 2001 and that number increases about 10% each year. At this rate, how many computers will there be in 2009?

$$\frac{2009}{2001}$$
$$\overline{8}$$

$$y = 600(1 + .10)^x$$
$$y = 600(1.10)^8$$
1286 million computers

Apr 17-7:58 AM

ACE.1 - exponential word problems that you solve

Each year the city recreation center sponsors a basketball tournament. Play starts with 128 teams. During each round, half of the teams are eliminated. How many teams remain after 4 rounds?

$$y = 128\left(\tfrac{1}{2}\right)^x$$
$$= 128\left(\tfrac{1}{2}\right)^4$$
$$= \boxed{8 \text{ teams}}$$

Apr 17-7:58 AM

ACE.2 - create equations for exponential growth and decay

Suppose you deposit $600 into an account earning 3.5% interest compounded annually. Write an equation that models the amount in the account after x years.

$$y = 600(1 + .035)^x$$
$$\boxed{y = 600(1.035)^x}$$

Apr 17-8:40 AM

ACE.2 - create equations for exponential growth and decay

A certain bacteria can double every hour. If you start with one bacteria, write the equation models the number of bacteria (B) after h hours.
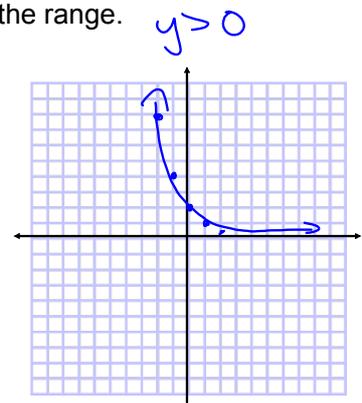
$$B = 1(2)^h$$

Apr 17-8:40 AM

FIF.7 - graph exponential equations

Graph and give the range. $y > 0$

$$y = 2(\tfrac{1}{2})^x$$

x	y
-2	8
-1	4
0	2
1	1
2	.5

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FIF.7 - graph exponential equations

Graph and give the range. $y > 2$

$y = 2^x + 2$

x	y
-2	2.25
-1	2.5
0	3
1	4
2	6
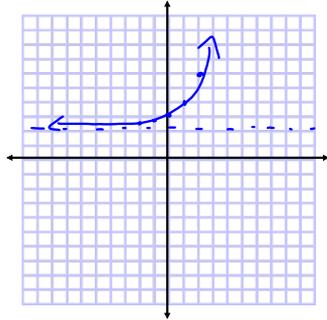
Apr 17-8:44 AM

FIF.7 - graph exponential equations

Give the equation.

(1, 4)
(0, 2)
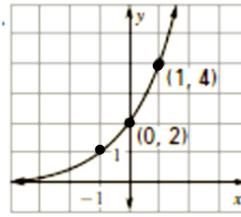
A. $y = 2(1/2)^x$
B. $y = 2(2)^x$
C. $y = 2x + 2$ line
D. $y = 2^x + 2$

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NRNS.1 - simplifing exponential expressions

$-4x^5y^4 \cdot 2x^6y$

$-8x^{11}y^5$

$\dfrac{5x^6y^{10}}{10x^2y^3}$

$\dfrac{1 \; x^4 \; y^7}{2}$

$\boxed{\dfrac{x^4 y^7}{2}}$

Apr 17-2:19 PM

NRNS.1 - simplifing exponential expressions

$(2x^{-2}y)^2$

$2^2 x^{-4} y^2$

$\boxed{\dfrac{4y^2}{x^4}}$

$3x(2x)^2$

$3x(2^2 x^2)$

$3x(4x^2)$

$\boxed{12x^3}$

Apr 17-2:19 PM

NRNS.1 - simplifying radicals

$\sqrt{20}$

$\sqrt{4 \cdot 5}$

$\sqrt{4}\sqrt{5}$

$\boxed{2\sqrt{5}}$

$2\sqrt{20}$

$2\sqrt{4 \cdot 5}$

$2\sqrt{4}\sqrt{5}$

$2 \cdot 2\sqrt{5}$

$\boxed{4\sqrt{5}}$

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NRNS.1 - simplifying radicals

$\sqrt{48x^2}$

$\sqrt{16 \cdot 3 \cdot x^2}$

$\sqrt{16}\sqrt{3}\sqrt{x^2}$

$4\sqrt{3} \cdot x$

$\boxed{4x\sqrt{3}}$

$\sqrt{48x^3}$

$\sqrt{16 \cdot 3 \cdot x^2 \cdot x}$

$\sqrt{16}\sqrt{3}\sqrt{x^2}\sqrt{x}$

$4\sqrt{3}\,x\sqrt{x}$

$\boxed{4x\sqrt{3x}}$

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SPID.6 - scatter plots (exponential)

The table at right gives the year and population (in millions) of California.

Is this exponential (growth) or decay?

Find the equation of the exponential regression.

Year	Yrs Since 1890 X	CA Pop Y
1890	0	1.21 .
1910	20	2.38
1930	40	5.68
1950	60	10.59
1970	80	19.97
1990	100	29.76

$$y = 1.32(1.03)^x$$

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SPID.6 - scatter plots (exponential)

Year	Years Since 1992 (X)	Stock Index Price (Y)
1992	0	633
1993	1	671
1994	2	793
1995	3	794
1996	4	1100
1997	5	1309
1998	6	1771
1999	7	2288
2000	8	4696

Fill in the missing part of the table.

Is this exponential (growth) or decay?

Find the equation of the exponential regression.

$$y = 497.1(1.26)^x$$

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Classwork: **Worksheet #1 - 16**

Homework: **Study for Benchmark 3**

Apr 26-4:49 PM