Bellwork Alg 2B Wednesday, November 1, 2017

- 1. Find the growth/decay factor, b, using each % change.
- a) 72% increase

- b) 0.081% increase
- 2. State the % change each equation represents and whether it's an increase or decrease
- a) $y = 36(1.04)^x$

- b) $y = 1.39(0.627)^x$
- 3. Write each in exponential form
- 4. Write each in logarithmic form

- a) log6 = x
- b) ln x = 3
- a) $x^4 = 8$
- b) $9^{1.5} = x$

- 5. Evaluate each logarithm without a calculator.
- a) log₂₅5
- b) $\log_2(0.25)$
- c) log_61
- d) log_33
- e) log10,000
- 6. Write as a single logarithm. $-3\log_4 A 5\left(\log_4 \frac{1}{D^2} \frac{1}{4}\log_4 W\right)$
- 7. Expand using the properties of logarithms. $\log \sqrt{\frac{G^6 \sqrt[4]{\frac{1}{H^3}}}{M^5}}$
- 8. Write as a single logarithm then evaluate.

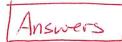
$$\frac{1}{2}\log_2 81 - \log_2 24 - \log_2 6$$

- 9. The value of an investment has depreciated 4.5% each year. The investment was worth \$400,000 in 2016.
- a) Find the value of the investment in 2010.
- b) In how many years, to the nearest hundredth, will the value of the investment be \$150,000?
- 10. The number of cells of a bacteria doubles every 45 minutes. There are 80 cells at 5:00 am. Find the number of cells at 10:20 am the same day.
- 11. Solve each to the nearest hundredth.

a)
$$5e^{3x-5} + 2 = 100$$

b)
$$7^{2x} - 4 = 50$$

Bellwork Alg 2B Wednesday, November 1, 2017



- 1. Find the growth/decay factor, b, using each % change.
- a) 72% increase

100.081%



b = 1.00081

2. State the % change each equation represents and whether it's an increase or decrease

a)
$$y = 36(1.04)^x$$

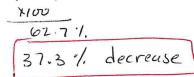
Write each in exponential form

a)
$$\log 6 = x$$

b)
$$ln x = 3$$

 $e^3 = x$

b)
$$y = 1.39(0.627)^x$$



4. Write each in logarithmic form

a)
$$x^4 = 8$$

b)
$$9^{1.5} = x$$

- 5. Evaluate each logarithm without a calculator.
- a) log₂₅5
- b) $\log_2(0.25)$
- c) log_61
- d) log_33
- e) log10,000









- 4
- 6. Write as a single logarithm. $-3\log_4 A 5\left(\log_4 \frac{1}{D^2} \frac{1}{4}\log_4 W\right)$

$$= \frac{\log_4 \frac{1}{A^3 D^{-10} \text{ trans}}}{\log_4 \frac{D^{10} \text{ Trans}}{A^3 \text{ trans}}}$$

7. Expand using the properties of logarithms.

$$\log \sqrt{\frac{G^6 \sqrt[4]{\frac{1}{H^3}}}{M^5}} = \log \left(\frac{6^6 + \frac{3}{4}}{m^5}\right)^{1/2}$$

$$= \log \left(\frac{6^3 + \frac{3}{4}}{m^{5/2}}\right)^{1/2}$$

$$\frac{1}{2}\log_2 81 - \log_2 24 - \log_2 6$$

$$-\log_2 \sqrt{81} - \log_2 24 - \log_2 6 = \log_2 \frac{9}{24.6} = \log_2 \frac{9}{144}$$

$$= \log_2 \frac{1}{16} = 2^2 = \frac{1}{16}$$

9. The value of an investment has depreciated 4.5% each year. The investment was worth \$400,000 in 2016.

a) Find the value of the investment in 2010.

The investment was worth \$400,000 in
$$400,000$$
 (.955) $x = 400,000$ (.955) $x = 400,000$ (.955)

a) Find the value of the investment in 2010.

$$\frac{150,000}{400,000} = \frac{400,000(.955)^{x}}{400,000}$$

$$.375 = (.955)^{x}$$

$$|09|_{455}(.375) = X$$

$$X = \frac{\log(.315)}{\log(.955)}$$

$$x = 21.30 \text{ yrs}$$

10. The number of cells of a bacteria doubles every 45 minutes. There are 80 cells at 5:00 am. Find the number of cells at 10:20 am the same day.

11. Solve each to the nearest hundredth.

a)
$$5e^{3x-5} + 2 = 100$$

$$\frac{5e^{3x-5}}{5} = \frac{98}{5}$$

$$80(2)^{x}$$
 $x= \pm 45 min periods$
= $80(2)^{320/45}$
= $11,060$ cells

b)
$$7^{2x} - 4 = 50$$

 $+ 4 + 4$
 $- 2x = 54$
 $\log_{7} 54 = 2x$
 $\frac{\log_{7} 54}{\log_{7} 7} = 2x$

$$x = 1.02$$