Bellwork Alg 2 Thursday, March 5, 2020

1. Use each percent change to find the base b of an exponential function: $y = a \cdot b^x$.

a) 12.97% decrease

b) 128% increase

2. State the percent change that each exponential equation represents.

a) $y = 2400(1.084)^x$

b) $y = 500(3.06)^x$

3. The number of cells of a certain bacteria doubles every 40 minutes. There were 32 cells at 10:30 am. Find the number of cells at 4:00 pm.

4. You invest $15,000 in an account that pays 9% interest compounded monthly. Find the number of years it will take for the investment to reach $100,000. Round to the nearest hundredth.

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ANSWERS

1. Use each percent change to find the base b of an exponential function: $y = a \cdot b^x$.

a) 12.97% decrease

$100\% - 12.97\%$

$= 87.03\%$

$b = 0.8703$

b) 128% increase

$100\% + 128\%$

$= 228\%$

$b = 2.28$

2. State the percent change that each exponential equation represents.

a) $y = 2400(1.084)^x$

1.084×100

$= 108.4\%$

$- 100\%$

8.4% increase

b) $y = 500(3.06)^x$

3.06×100

$= 306\%$

$- 100$

206% increase

3. The number of cells of a certain bacteria doubles every 40 minutes. There were 32 cells at 10:30 am. Find the number of cells at 4:00 pm.

$y = 32(2)^x$

$x =$ # 40 min periods.

10:30 am to 4:00 pm

$= 5\frac{1}{2}$ hrs

$\times 60$

330 min

$\div 40$

$x = 8.25$

$y = 32(2)^{8.25}$

$= 9742$ cells

4. You invest \$15,000 in an account that pays 9% interest compounded monthly. Find the number of years it will take for the investment to reach \$100,000. Round to the nearest hundredth.

$$\frac{15{,}000}{15000}\left(1 + \frac{.09}{12}\right)^{12t} = \frac{100{,}000}{15000}$$

$$(1.0075)^{12t} = \frac{100}{15} \text{ or } \frac{20}{3}$$

$$\frac{\log_{1.0075}\left(\frac{20}{3}\right)}{12} = \frac{12t}{12}$$

$t = 21.16$ yrs