



Hints for this assignment

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Hello class,

Please try to find a real growth rate for your state and city. If you can't find the city rate, please use any number other than .9%. Thank you! I need an example using another number maybe 11 or 7

REMINDER: How to solve equation with exponents

We have to solve equation for the annual growth rate of .9%

$2 = 1.009^n$ where we need to calculate n . To solve exponential equation, we need to take log of both parts.

$$\log(2) = \log(1.009^n)$$

we use the following rule:

$\log(m^r) = r * \log(m)$ - the log of m with an exponent r is r times the log of m

$$\text{so, } \log(1.009^n) = n * \log(1.009)$$

Using calculator: $\log 2 = 0.30103$ and $\log 1.009 = 0.003891$

so

$$\begin{aligned} 0.30103 &= n * 0.003891 \\ n &= 0.30103 / 0.003891 \\ n &= 77.36242 \\ n &= 77.4 \end{aligned}$$

Hint: if base of log is not defined then by default the base is 10. If you use Excel you calculate $\log(2, 10)$ and $\log(1.009, 10)$.
