Bellwork Alg 2 Friday, April 3, 2020

1. The population of deer in a rural area has been decreasing 2.4% each year. In 2008 there were an estimated 2400 deer.

a) Find the number of deer in 2002 to the nearest whole number.

b) Find the number of years, to the nearest hundredth, it will take for the deer population to reach 1500.

2. Solve. $\log(x-3)+2=\log(x+1)$

3. Use all three properties of logarithms to write this expression as a single logarithm.

$2\log_4 G-\left(\frac{1}{3}\log_4 W+4\log_4 Y\right)-5\log_4 K$

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ANSWERS

1. The population of deer in a rural area has been decreasing 2.4% each year. In 2008 there were an estimated 2400 deer.

a) Find the number of deer in 2002 to the nearest whole number.

find the base

$100\% - 2.4\% = 97.6\%$

$b = .976$

x = #yrs since 2008

$x = -6$

$y = 2400(.976)^{-6}$

$y = 2777$ deer

b) Find the number of years, to the nearest hundredth, it will take for the deer population to reach 1500.

$= y$

$\frac{1500}{2400} = \frac{2400(.976)^x}{2400}$

change to log form: $.625 = .976^x \rightarrow \log_{.976}(.625) = x$

19.35 yrs

2. Solve. $\log(x-3)+2=\log(x+1)$

$-\log(x-3) \quad -\log(x-3)$

$2 = \log(x+1) - \log(x-3)$

$2 = \log\frac{x+1}{x-3}$

change to exp. form: $10^2 = \frac{x+1}{x-3}$

$(x-3)100 = \frac{x+1}{x-3}\cdot x-3$

$100x - 300 = x + 1$

$+300 \quad +300$

$100x = x + 301$

$-x \quad -x$

$\frac{99x}{99} = \frac{301}{99}$

$x = 3.04$

3. Use all three properties of logarithms to write this expression as a single logarithm.

$2\log_4 G - \left(\frac{1}{3}\log_4 W + 4\log_4 Y\right) - 5\log_4 K$

$\log_4 G^2 - \left(\log_4 \sqrt[3]{w} + \log_4 y^4\right) - \log_4 k^5$

$= \log_4 \frac{G^2}{\sqrt[3]{w}\, y^4 k^5}$