

For all problems you need to use your calculator – I did part A for you-

1. Of all the users of the web service Twitter, Lady Gaga (@ladygaga) has the most followers. At the start of year 2010, she had 3,200,000 followers. Her number of followers has been steadily increasing by 8% each month.

- a. Let $f(x)$ stand for how many followers @ladygaga has, x months after the start of year 2010. Write a function formula for $f(x)$.

$$f(x) = 3,200,000(1.08)^x$$

- b. How many followers did @ladygaga have at the start of 2011?

$$f(12) = 8,058,144$$

- c. Solve graphically using the 2nd trace-intersect function on your calculator or by algebra using logarithms. Round your answer to two decimal places. When did the number of followers of @ladygaga surpass 5,000,000 ?

$$5,000,000 = 3,200,000(1.08)^x$$

5.8 months

- d. Solve graphically using the 2nd trace-intersect function on your calculator or by algebra using logarithms. Round your answer to two decimal places Solve the equation $f(x) = 10,000,000$. Explain the meaning of the answer as it relates to @ladygaga on Twitter

$$10,000,000 = 3,200,000(1.08)^x$$

14.8mth around March 2011

24. The number V of computers infected by a computer virus increases according to the model $V(t) = 100e^{4.6052t}$, where t is the time in hours. Find (a) $V(1)$, (b) $V(1.5)$, and (c) $V(2)$.

25. Let Q represent a mass of carbon 14 (^{14}C) (in grams), whose half-life is 5715 years. The quantity of carbon 14 present after t years is $Q = 10\left(\frac{1}{2}\right)^{\frac{t}{5715}}$. (a) Determine the initial quantity (when $t = 0$). (b) Determine the quantity present after 2000 years. (c) Sketch the graph on your calculator over the interval $t = 0$ to $t = 10,000$.

$$\begin{aligned} v(1) &= 10,000 \\ v(1.5) &= 10,000.4 \\ v(2) &= 10,000.8 \\ &100,005.9 \end{aligned}$$

(A) $t=0$ 10
(B) $t=2000$, 7.846

