Answer on question 36294 – Math – Calculus

The population of the greater San Antonio area can be approximately modeled by the equation N=1.3e^(.02t), where N is in millions and t is the number of years since 2006.

a) What will the population be in 2016, according to the model?

b) When will the population reach 2 million?

Can someone show the steps on how they found the answer? thanks!

Solution

a) The population can be found using the given formula

$$N = 1.3e^{.02t}$$

From 2006 to 2016 to years will pass. Substituting t=10 we find the population in 2016 year.

$$N_{2016} = 1.3e^{0.02*10} \approx 1.5878\ million$$

b) Substituting 2 instead N in the model equation we get
$$2 = 1.3e^{.02t}$$
$$e^{.02t} = 1.5385$$
$$0.02t = \ln 1.5385 \approx 0.4308$$
$$t \approx 21.5$$

Answer: a) $\approx 1.5878\ million$; b) 21.5 years.