2. [7 points]

a. [4 points] A population of fleas takes residence at the nearby *I-Love-Functions Dog Hotel* (oh no!) and the population grows exponentially for the first couple of days. At $t = 2$ hours after the infestation started, the population is 1000 fleas. By $t = 6$ hours after it started, the population is 2000 fleas. Write a formula for $P(t)$, the number of fleas t hours after the infestation started.
Show all work. Your final formula should include parameters in their EXACT form.

$P(t) =$ _____

b. [3 points] *Last* year a population of fleas also took up residence at the hotel and their population, as a function of hours since their arrival, was given by:

$$Q(t) = 500(1.22^t)$$

By what percent did *this* population increase each hour?

_____ %

How long did it take for their initial population to triple?
Show all work. Give your final answer in decimal form, NOT exact form.

_____ hours