

3. [12 points] Let $C(t)$ and $A(t)$ be the production (in thousands of pounds) of corn and apples in a farm t years after 2002, where

$$C(t) = 200e^{-0.4t+1} \quad \text{and} \quad A(t) = 120e^{0.5t}$$

- a. [3 points] What is the annual percent growth rate of the function $C(t)$? Your answer must be exact or accurate up to the first two decimals. Show all your work.

Annual percentage growth rate=_____

- b. [4 points] How long after 2002 will the production of corn be reduced to a third of its size that year? Your answer must be exact or accurate up to the first two decimals. Show all your work.

Answer:_____

The statement of the problem has been included below for your convenience.

Let $C(t)$ and $A(t)$ be the production (in thousands of pounds) of corn and apples in a farm t years after 2002, where

$$C(t) = 200e^{-0.4t+1} \quad \text{and} \quad A(t) = 120e^{0.5t}$$

- c. [5 points] According to these functions, when will the production of corn be the same as the production of apples? Your answer must be in **exact form**. Show all your work.

$t =$ _____