6. [12 points] A shipment of fruit is delivered to a warehouse. The boxes containing the fruit were not properly sealed and contained fruit flies. The population of fruit flies (in thousands) in the warehouse is given by the function

\[ F(t) = 12 - 10 e^{-0.17t} \]

where \( t \) is the number of days after the fruit was delivered to the warehouse. Assume that there were no fruit flies in the warehouse before the fruit was delivered.

a. [2 points] How many fruit flies entered the warehouse when the fruit was delivered? Include units.

Answer: 

b. [4 points] How long did it take for the population of fruit flies to double after the fruit was delivered into the warehouse? Show all your work and include units.

\[ t = \text{______________} \]

Problem continues on next page
The statement of the problem has been rewritten for your convenience:

A shipment of fruit is delivered to a warehouse. The boxes containing the fruit were not properly sealed and contained fruit flies. The population of fruit flies (in thousands) in the warehouse is given by the function

\[ F(t) = 12 - 10 e^{-0.17t} \]

where \( t \) is the number of days after the fruit was delivered to the warehouse. Assume that there were no fruit flies in the warehouse before the fruit was delivered.

d. [4 points] Five days after the fruit was delivered to the warehouse, a powerful pesticide is applied to control the population of fruit flies. The pesticide causes the population of fruit flies to decay at a continuous rate of 41% per day. Find a formula for \( P(T) \), the number of fruit flies (in thousands) \( T \) days after the pesticide was applied.

\[ P(T) = \text{__________________________}. \]