2. [14 points]
   a. [3 points] The population of aliens on planet Maize increases at a constant rate of 10 aliens every two years. We know that in 2005 there were 120 aliens on planet Maize. Find a formula for \( M(t) \), the function which gives the number of aliens on planet Maize \( t \) years after 2000.

   \[
   M(t) = \underline{\text{}}
   \]

   b. [3 points] Suppose that the population of aliens on planet Yellow in any given year is a thousand more the population of aliens on planet Maize ten years earlier. Find a formula for \( Y(t) \), the population of planet Yellow \( t \) years after 2000, in terms of the function \( M \).

   \[
   Y(t) = \underline{\text{}}
   \]

   c. [3 points] The population of aliens on the planet Blue decreases at a continuous percent rate of 10 \% per year. We know that in 2002 there were 100 aliens on planet Blue. Find a formula for \( B(t) \), the function which gives the number of aliens on planet Blue \( t \) years after 2000.

   \[
   B(t) = \underline{\text{}}
   \]

   d. [5 points] The alien population on planet Navy \( t \) years after 2000 is given by the function \( N(t) \), where

   \[
   N(t) = \frac{100}{1 + t^2}.
   \]

   Find the average rate of change of \( N(t) \) over the interval \([1, 3]\) and give a practical interpretation of your result.

   \[
   \text{Average rate of change:} \underline{\text{}}
   \]

   Interpretation: