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*.

$M(t) =$_____.

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.

$Y(t) =$_____.

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*.

$B(t) =$_____.

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.

Average rate of change:_____

Interpretation: