Population Exercise

An initial bird population consists of 50 individuals, and every 2 years, it increases by 200%.

1. What is the formula for the function that represents the growth of the bird population? Indicate in which unit of time the variable t is measured.
2. After how much time will the bird population be 1000 individuals?

Solutions

1. After two years, we would have $50 * (1 + 2) = 50 * 3 = 150$. After 4 years: $50 * (1 + 2) * (1 + 2) = 150 * (1 + 2) = 450$. Successively, the formula we would obtain is:

$$y = 50(1 + 2)^t$$

   Where t represents two years. Thus, if $t = 2$, it would be 4 years, and so on.

2.

$$1000 = 50 * (1 + 2)^t$$

$$20 = 3^t$$

$$log_3(20) = t$$

$$2.72683 = t$$

   Therefore, $2 * 2.72683302786 = 5.453666$ years must pass. That is, almost 5 and a half years. We can check this: $50 * (3)^{2.7268} = 1000$ (approximately)