

Mathematics 172 Homework, January 24, 2018.

In this assignment we review some facts about exponential functions. These can be written a couple of ways. We first consider functions that look like

$$N(t) = N_0 a^t.$$

Note here that

$$N(0) = N_0 a^0 = N_0.$$

Therefore N_0 is just the value of $N(t)$ when $t = 0$.

Problem. 1. Find an exponential function $N(t)$ that satisfies the following conditions:

- (a) $N(0) = 500$ and $N(3) = 750$. *Solution:* $N(t) = 500(1.1447)^t$.
- (b) $N(0) = 9.8$ and $N(4) = 6.2$. *Solution:* $N(t) = 9.8(.8918)^t$.
- (c) $N(3) = 19.2$ and $N(5) = 23.6$. *Solution:* $N(t) = 14.089(10868)^t$

Problem. 2. If $N(t)$ is an exponential function with $N(0) = 48$ and $N(5) = 132$, then solve $N(t) = 1,000$.

Solution: $t = 15.011$

Problem. 3. If you invest 500 dollars at 5% simple interest then how many years until you have 2,000 dollars?

Solution: $t = 28.41$ years.