

## Mathematics 172 Homework

All problems here concern discrete exponential growth  $N_t = N_0\lambda^t$ .

1. For  $N_t = 43(1.24)^t$ 
  - (a) What is  $N_{15}$ ? *Answer:* 1058.2
  - (b) What is the doubling time? *Answer:* 3.22227
  - (c) How long before  $N$  becomes 1,500? *Answer:* 16.512
2. Assume  $N_0 = 123$  and  $N_5 = 456$ .
  - (a) Find  $\lambda$  *Answer:* = 1.2996
  - (b) What is the formula for  $N_t$ ? *Answer:*  $N_t = 123(1.2996)^t$
  - (c) What is  $N_{20}$ ? *Answer:* 3,235.07
  - (d) What is the doubling time? *Answer:* 2.64497
  - (e) How long until  $N$  reaches 1,000,000? *Answer:* 34.3557