Name: SOLUTIONS
Section 1.7 - In class example
Math 151 – Spring 2018

1. Find the present value of an $8000 payment to be made in 5 years.

   4% compounded continuously

   Recall that in this case

   $$P = \frac{\$8000}{e^{0.04(5)}} = \$6,549.84.$$

2. 4000 dollars is invested in a bank account at an interest rate of 8% per year, compounded continuously. Meanwhile, 20000 dollars is invested in a bank account at an interest rate of 3 percent compounded annually. When will the two accounts have the same balance?

   We want to find t such that:

   Account 1   Account 2

   $$4000 e^{0.08t} = 20,000(1+0.03)^t = 20,000(1.03)^t$$

   Indeed,

   $$\frac{4000\, e^{0.08t}}{4,000} = \frac{20,000(1.03)^t}{4,000}$$

   $$e^{0.08t} = 5(1.03)^t$$

   $$\ln(e^{0.08t}) = \ln(5 \cdot (1.03)^t)$$

   $$0.08t = \ln(5) + \ln(1.03)^t$$
   $$\text{* using } \ln(AB) = \ln(A) + \ln(B)$$

   $$\rightarrow \quad 0.08t = \ln(5) + t\ln(1.03)$$

   $$(0.08 - \ln(1.03))t = \ln(5)$$

   $$t = \frac{\ln(5)}{0.08 - \ln(1.03)}$$