pp. 30-31 Continuously Compounded Interest 7.1

p.30

Warm-up:

Exponential growth/decay:

A car depreciates 10% each year. If you bought this car today for $5000, how much will it be worth in 7 years?

$y = 5000(1-.1)^7$

$y = \$2,391.48$

Homework:

What questions do you have?

Finish Worksheet

Comp. Int. Prac.

Continuous Compounded Interest e- Euler# (in calc.) p.30

With continuously compounded interest, you are constantly earning interest and the interest keeps earning on the previous interest.

Formula for Continuous Compounded Interest

$y = Pe^{(rt)}$

starting amount, rate (decimal), time

Example: You deposit $1000 in a bank account that pays 8% annual interest. Find the balance after three years if the interest is compounded continuously.

$y = 1000e^{(.08 \cdot 3)}$

$y = \$1271.25$

p.31

1.) Find the amount of money you would have after 10 years if you invested $15,000 at a rate of 1.75%, compounded continuously.

$y = 15000e^{(.0175 \cdot 10)}$

$y = \$17,868.69$

2.) Find the amount of money you would have after 4 years if you invested $20,000 at a rate of 3.5%, compounded continuously.

$y = 20000e^{(.035 \cdot 4)}$

$y = \$23,005.48$

p.31

4.) You need to choose where to invest $5,000. Bank A offers 6% interest compounded monthly. Bank B offers 5.75% interest compounded continuously. You plan to invest for 10 years. Where should you invest your money?

Bank A

$y = 5000\left(1 + \frac{.06}{12}\right)^{(12 \cdot 10)}$

$y = \$9,096.98$

Bank B

$y = 5000e^{(.0575 \cdot 10)}$

$y = \$8,885.65$

Practice time: Homework worksheet