

pp. 30-31 Continuously Compounded Interest

7.1

Warm-up:

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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?

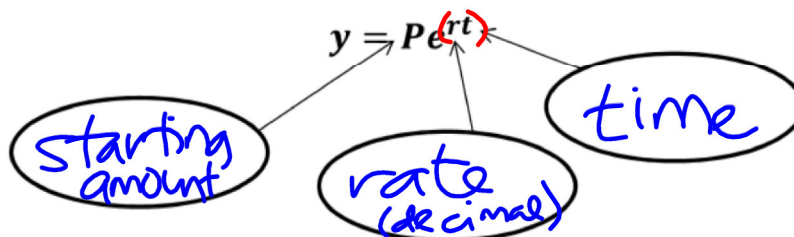
Finish worksheet
Comp. Int. Prac.

Continuous Compounded Interest

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

e - Euler's (in calc.)

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Formula for Continuous Compounded Interest

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.

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

$$y = \$1271.25$$

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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.

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

$$y = \$23,005.48$$

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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

