Name: _____

Worksheet #3 - Continuous Compounding

In this worksheet, you will examine *continuously compounded interest* – what happens as you compound interest more and more often.

$\boxed{1}$ If you deposit \$1 in a bank account that earns 100% interest, compounded quarterly (4 times per year), how much money will be in the account after one year?

$\boxed{2}$ If you deposit \$1 in a bank account that earns 100% interest, compounded monthly (12 times per year), how much money will be in the account after one year?

$\boxed{3}$ If you deposit \$1 in a bank account that earns 100% interest, compounded daily (365 times per year), how much money will be in the account after one year?

$\boxed{4}$ If you deposit \$1 in a bank account that earns 100% interest, compounded hourly, how much money will be in the account after one year?

$\boxed{5}$ If you deposit \$1 in a bank account that earns 100% interest, compounded secondly, how much money will be in the account after one year?

$\boxed{6}$ Graph the function $\left(1 + \frac{1}{x}\right)^x$ on your calculator, and try to determine from the graph the value of

$$\lim_{x \to \infty} \left(1 + \frac{1}{x}\right)^x$$

$\boxed{7}$ Explain what your answer to question 6 says about how much money you could expect to earn in the bank account problems described above by compounding more and more often.