7-2 Euler's Number ($e \approx 2.71828$)

1. The number e is a famous irrational number, and is one of the most important numbers in mathematics.

2. 2.71828182845904523536028747135 27 (and more ...)

3. The value of e is also equal to 1 + 1/1! + 1/2! + 1/3! + 1/4! + 1/5! + 1/6! + 1/7! + ... (etc)

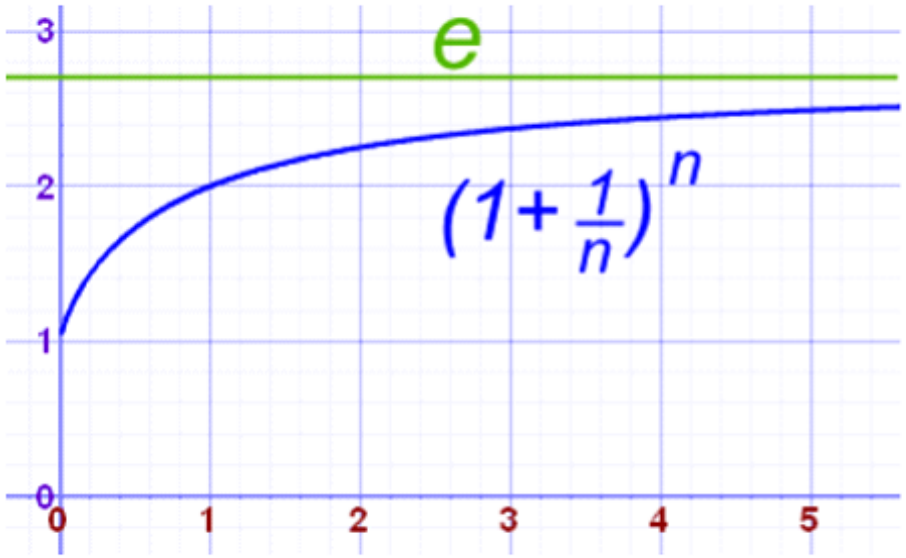
4. The first few terms add up to: 1 + 1 + 1/2 + 1/6 + 1/24 + 1/120 = 2.718055556

5. It is often called Euler's number after Leonhard Euler

You can remember the curious pattern that after the "2.7" the number "1828" appears TWICE

Following that is the 45°, 90°, 45° reminding us of a special triangle.

2.7 1828 1828 45 90 45



n	$(1 + 1/n)^n$
1	2.00000
2	2.25000
5	2.48832
10	2.59374
100	2.70481
1,000	2.71692
10,000	2.71815
100,000	2.71827

Continuously Compounded Interest

$$A = Pe^{rt}$$; A = Account

P = Principal (original) r = rate t = time

1. You invest $1050 that is continuously compounded at a rate of 5.5%. How much will be in the account in 5 years?

2. If you invest $500 at an annual interest rate of 10% compounded continuously, calculate the final amount you will have in the account after five years.

3. Simplify to 4 decimal places $\frac{5}{2e}$ = [ ]

4. Simplify to 4 decimal places $\frac{3}{2}e^{\frac{1}{4}}$ = [ ]

5. Simplify to 4 decimal places e^{e} = [ ]

Formula for Compound Interest

Compound interest is a great thing when you are earning it! Compound interest is when a bank pays interest on both the **principal (the original amount of money)** and the **interest** an account has already earned.