

The number e is an irrational number that often occurs with exponential and logarithmic functions.

Just as π is an irrational number that often occurs in applications with circles.

$$A = \pi \cdot r^2 \qquad C = 2\pi r$$

$$\pi \approx 3.14$$

The number e is an irrational number that often occurs with exponential and logarithmic functions.

The number e is defined as

$$\left(1 + \frac{1}{n} \right)^n$$

$$\text{as } n \rightarrow \infty$$

n	$\frac{1}{n}$	$1 + \frac{1}{n}$	$\left(1 + \frac{1}{n}\right)^n$
1	1	2	2
10	0.1	1.1	2.59374246
100	0.01	1.01	2.704813829
1,000	0.001	1.001	2.716923932
10,000	0.0001	1.0001	2.718145927
100,000	0.00001	1.00001	2.718268237
1,000,000	0.000001	1.000001	2.718280469
1,000,000,000	10^{-9}	$1 + 10^{-9}$	2.718281827

The number e is an irrational number that often occurs with exponential and logarithmic functions.

$$e \approx 2.718281827$$

$$e \approx 2.718$$

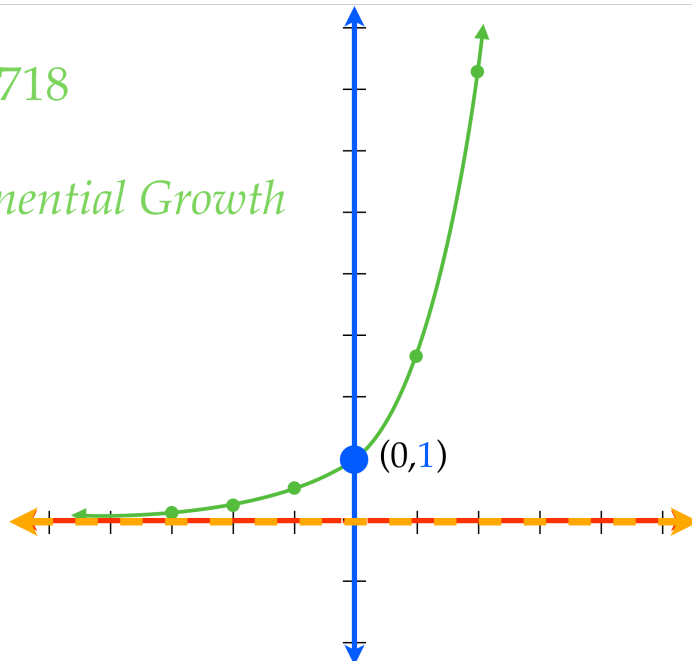
$$f(x) = e^x$$

x	$f(x)$
-3	0.05
-2	0.14
-1	0.37
0	1
1	2.72
2	7.39
3	20.1

$$e \approx 2.718$$

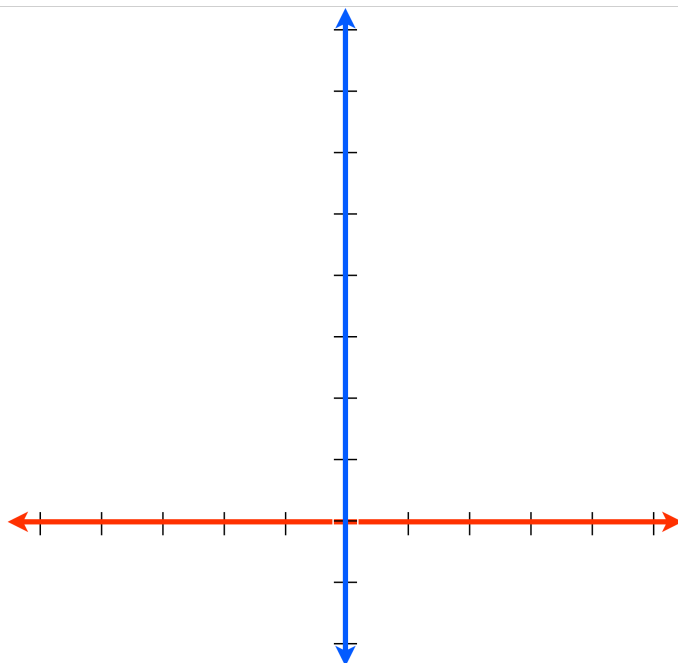
$$a > 1$$

Exponential Growth



Graph the following using transformations

$$f(x) = e^{(x+2)} - 1$$



Graph the following using transformations

$$f(x) = e^{-x} + 2$$

