Exponent Function

General equations:

 $\mathbf{y} = \mathbf{a}\mathbf{b}^{\mathbf{x}} = \mathbf{a}(\mathbf{1} + \mathbf{r})^{\mathbf{x}}$ where $\mathbf{a} = \text{initial value}$, $\mathbf{b} = \text{base}$, $\mathbf{r} = \text{rate}$

$$y = ae^{rx}$$
 where a = initial value, e = base = 2.718..., r = rate

Compound interest:
$$A(t) = P\left(1 + \frac{r}{n}\right)^{nt}$$
 Continuous compounding:
 $A = Pe^{rt}$

where where A(t) = the accumulated amount at time t, P = initial value (principal), r = annual rate, n = number of timescompounded per year, and t = number of years



Growth function

Example:

 $y = 2^x$



Decay function

Example:

$$y = 2^{-x} = \left(\frac{1}{2}\right)^x$$

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