



**1-How can exponential growth continue on forever?**

**2-When is growth exponential versus logistic?**

**3-To what extent can I use mathematics to prepare for my own financial success (or demise)?**

**4-How are exponential and logarithmic functions related?**

**5-Why is the natural base  $e$  natural?**

# Exponential Functions

$$f(x) = ab^x$$

Initial Value  $a$   $\rightarrow$  what if  $x=0$ ,  $f(x)=a$

Growth/Decay Factor

$b$

## Inflation

The typical inflation rate is about 3%

Family to movies \$ 35  
9.50  
8

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In 20 yrs, how much will it cost?

$$35 (.03) = 1.05$$

$$35 + 1.05 = 36.05$$

$$\frac{35 (1.03)(1.03)}{35 (1 + .03)}$$

$$f(x) = 35 (1.03)^x$$

$f(x)$  is total cost of tickets  
where  $x$  is # of years after 2007

\$ 63.21

Depreciation  $1a - a(.09)$

$$1a - .09a = .91a$$

The typical depreciation rate for a car is 7 to 12%.

2008 Miata

\$19000

9% dep.

$$f(x) = 19000(.91)^x \text{ byr}$$

\$10789.50