

Notes 4.1 Zero and negative exponents

$A^0 = 1$, exception is $0^0 = \text{undefined}$

$$A^{-x} = \frac{1}{A^x} \text{ and } \frac{1}{A^{-x}} = A^x$$

Notes 4.2 Multiplying powers with the same base

$$A^x A^y = A^{x+y}$$

Notes 4.3 More multiplication properties of exponents

$$(AB)^x = A^x B^x$$

$$\left(\frac{A}{B}\right)^x = \frac{A^x}{B^x}$$

$$(A^x)^y = A^{xy}$$

Notes 4.4 Division properties of exponents

$$\frac{A^x}{A^y} = A^{x-y}$$

Notes 4.5 Exponential functions

For a function to be exponential it must have a variable as the exponent.

Notes 4.6 Exponential Growth and Decay

In the form: $y = A \cdot B^x$ A is the **initial amount** and B is the **growth factor**.

$$A = P \left(1 + \frac{r}{n}\right)^{nt} \text{ this is the compound interest formula.}$$

A = future value of investment

P = Principal investment or initial amount invested

r = annual interest rate (must be a decimal!)

n = number of times compounded per year

t = number of years invested (this must be in years!) (if it is 5 months then it would be 5/12)

Words to describe n for compounding:

annually is n=1

bi-annually is n=2

quarterly is n=4

monthly is n=12

bi-monthly is n=24

semi-annually is n=2