<u>Unit 4 Vocabulary</u>:

- **Asymptote:**

- **Common logarithm:**

- **Continuously compounded interest**

- **Compounded interest:**

- **Exponential functions:**

- **Logarithmic functions:**

- **Logarithm:**

- **Natural exponential:**

- **Natural logarithm:**

***Unit 4 Vocabulary*:**

- **Asymptote:** An **asymptote** is a line or curve that approaches a given curve arbitrarily closely. A graph never crosses a vertical asymptote, but it may cross a horizontal or oblique asymptote.

- **Common logarithm:** A logarithm with a base of 10. A common logarithm is the exponent, *a*, such that $10^a = b$. The common logarithm of x is written *log* x. For example, *log 100* = 2 because $10^2 = 100$.

- **Continuously compounded interest:** Interest that is, theoretically, computed and added to the balance of an account each instant. The formula is $A = Pe^{rt}$, where *A* is the ending amount, *P* is the principal or initial amount, *r* is the annual interest rate, and *t* is the time in years.

- **Compounded interest:** A method of computing the interest, after a specified time, and adding the interest to the balance of the account. Interest can be computed as little as once a year to as many times as one would like. The formula is $A = P(1+\frac{r}{n})^{nt}$ where *A* is the ending amount, *P* is the principal or initial amount, *r* is the annual interest rate, *n* is the number of times compounded per year, and *t* is the number of years.

- **Exponential functions:** A function of the form $y=a^x$ where $a > 0$ and $a \neq 1$.

- **Logarithmic functions:** A function of the form $y=\log_b x$ with $b \neq 1$ and *b* and x both positive. A logarithmic function is the inverse of an exponential function. The inverse of $y = b^x$ is $y=\log_b x$.

- **Logarithm:** The logarithm base *b* of a number x, $\log_b x$, is the exponent to which *b* must be raised to equal x.

- **Natural exponential:** Exponential expressions or functions with a base of *e*; i.e., $y = e^x$.

- **Natural logarithm:** A logarithm with a base of *e*. $\ln b$ is the exponent, *a*, such that $e^a = b$. The natural logarithm of x is written *ln* x and represents $\log_e x$. For example, *ln 8 = 2.0794415…* because $e^{2.0794415\ldots} = 8$.