## Log Properties:

1) Product Property: $\log uv = \log u + \log v$

2) Quotient Property: $\log\left(\dfrac{u}{v}\right) = \log u - \log v$

3) Power Property: $\log u^n = n \cdot \log u$

4) $\log\left(\dfrac{ab}{cde}\right) = \log a + \log b - \log c - \log d - \log e$

5) $\log(u+v) \neq \log u + \log v$

6) $\log_e e^x = x \rightarrow \ln e^x = x$

7) $e^{\log_e x} = x$

## Graphing Log Functions:
### Helpful Log Characteristics

1) $\log_b(x)$   *set the log argument $=0$ to find the Vertical Asymptote

2) $\log_b(1) = 0$

3) $\log_b(b) = 1$

*4) $\log_b\left(\dfrac{1}{b}\right) = -1$

* $\log_b(b^x) = x$

* $b^{\log_b(x)} = x$