**Summary Chapter 10: Exponential and Logarithmic Functions**
*Intermediate Algebra* from OpenStax, a free and open online textbook

**Section 1:**

**Section 2:**

**Terminology**
- Exponential Function
- Natural Exponential Function

**Be Able To**
- Evaluate Exponential Function
- Graph of the Exponential Function
- Find domain of the Exponential Function
- Find $x$-intercept and $y$-intercept of the Exponential Function
- Graph of the Natural Exponential Function
- Find domain of the Natural Exponential Function
- Find $x$-intercept and $y$-intercept of the Natural Exponential Function
- Applying the concepts

**Be able to use the formula**
- Formulas for Compound Interest:

  After $t$ years, the balance, $A$, in an account with principal $P$ and annual interest rate $r$ is given by

  1. For $n$ compounding periods per year: $A = P \left(1 + \frac{r}{n}\right)^{nt}$
  2. For continuous compounding: $A = Pe^{rt}$

**Section 3:**

**Terminology**
- Logarithmic Function
- Common Logarithmic Function
- Natural Logarithmic Function

**Be Able To**
- Evaluate Common Logarithmic Functions using the calculator
- Construct a graph the Common Logarithmic Function
- Evaluate Natural Logarithmic Functions using the calculator
- Construct a graph the Natural Logarithmic Function
- Applying the concepts

**Section 4:**

**Omitted**

**Section 5:**

**Omitted**

**Be able to use the formula**
- The loudness level, $D$: measured in decibels, of a sound intensity, $I$, measured in watts per square inch is $D = 10 \log \left(\frac{I}{10^{12}}\right)$
- The magnitude $R$ of an earthquake: $R = \log I$, where $I$ is the intensity of the shock wave.
- The pH of a substance: $pH = -\log[H^+]$, where $[H^+]$ is the hydrogen ion concentration in moles per liter.
Sample Applications of Chapter 10 Content

- Use a given formula to calculate the current value of a car

  Example: \( v(t) = P(1 - r)^t \) where \( v(t) \) is the current value of the car, \( P \) is the purchased price of the car, \( r \) is the depreciation rate and \( t \) is time

- Use a given formula to calculate bacteria growth