**Name: _____**

**Algebra 2B Unit 2**

Day 1 - Avg Rate of Change

- Average Rate of change
  - Intervals: _____ _____
  - Same as slope formula
  - Finding from the function
  - Finding by observing a graph

Day 2 - Solving Exponential Equations

- Intro - Exponential Rules
  - Product: _____
  - Quotient: _____
  - Power: _____
- Solving Exponential Equations
  - Change the B_____so that they are equal
  - Drop the bases and set the E_____ equal to each other

Day 3 - Families of Functions

Use the knowledge of Transformation so Families of Functions to draw pictures using Desmos by using the following shape: Lines, Parabolas, Circles, Ellipses, Exponential curves

Day 4 - Exponential Functions

- Exponential Equations $y = ab^x$ where b > 0 and b is NOT 1
  - b is the B_____
  - x is the E_____
  - a is the I_____ V_____- (y-intercept)
- Types of Exponential Behavior
  - G_____- Graph I_____ as X increases (as it goes from left to right)
    - Note: b is greater than 1
  - D_____- Graph D_____ as X increases (as it goes from left to right)
    - Note: b is less than 1 (but still greater than zero)
- Interest rate formula for an investment: $F(t) = a(1 + r)^t$
  - F(t) - the full A_____ of the investment after “t” time periods
  - “a” - I_____ amount of the investment
  - “r” - rate of Growth or Decay - A P_____ rate represented as a decimal
  - “t” - N_____ of time periods

Day 5 - Logarithmic properties

Product Log XY =

Quotient Log $\frac{X}{Y}$ =

Power Log $X^Y$ =

Day 6 - Logarithms

- E_____ Functions are the inverse of L_____ Functions
- We can convert E_____functions to Logarithmic Functions
- Y = $\text{Log}_3$ 9 "What is the exponent "Y" if 3 is the base and 9 is the answer?"
- For instance: 2 = $\log_{10}$ 100 could be read "2 is the exponent of 10 such that 100 is the answer"
    - Y = base$^x$ $\leftarrow \rightarrow$ x = $\log_{base}$ Y
    - 81 = $3^4$ $\leftarrow \rightarrow$ 4 = $\log_3$ 81
- Evaluating a Log:
    - Steps
        i. Write as a L____ function — Ex: $\text{Log}_8$ 32 = X
        ii. Rewrite as an E_____ function — $32 = 8^x$
        iii. Write each side using a C_____ base — $2^5 = (2^3)^x$
        iv. Drop the B_____ and set the E_____ equal to each other. — $\cancel{2}^5 = \cancel{2}^{3x} \rightarrow 5 = 3x$
        v. Solve for the variable

Day 7 - Solving Exponential equations with different bases

- Steps
    - Take the L_____ of Both Sides
    - Use the P_____ Property to move the exponent out of the Log
    - Divide both sides to I_____ the variable
    - Use Calculator to solve

Day 8 - Natural Logarithmic Functions

- Natual Logs are simply L_____ where the base is "e"
- e = 2.71828…
- Log P_____ apply to natural logs
- Solving
    - Rewrite in E_____ form
    - Solve for the V_____