

Admin Notes / Agenda

- Lesson Review - Will
- Projects will be turned back by Thursday, corrections expected by Monday in class.
- Change in schedule for Writ 0 / MA204 Discussion

Key Terms:

1. **Functions** are parameterized mathematical models, we will use to predict outcomes
2. **explanatory variable**
3. **response variable**
4. **Families of Functions** linear, Exponential, and polynomial
5. **parameters** what we can change to affect our model selection
6. **Slope-intercept form of a line** $y = mx + b$ where m is the slope or rate of change and b is the y -intercept
7. **Point slope form of a line** $y - y_0 = m(x - x_0)$ where m is the slope or rate of change and (x_0, y_0) is a point on the line
8. **General form of a line** $Ax + By + C = 0$ where A , B , and C are constants.
9. In a **First Principle** approach a function is developed based on a physical or contextual relationship you understand about the problem
10. In an **Empirical** approach a solution type a function is developed based on data first. This maybe validated employing contextual information about the problem context or further data.

1 Model Family Discussion

1.1 Linear

Takes the slope-intercept form of $y = mx + b$.

Takes the point-slope form of $y - y_0 = m(x - x_0)$.

Takes the General form of a line of $Ax + By + C = 0$.

1.2 Exponential

Takes the form: $y = ab^x + d$

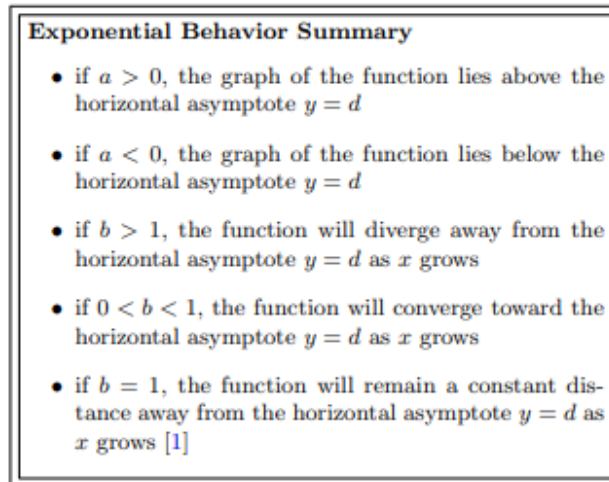


Figure 1: Exponential Behavior Explained

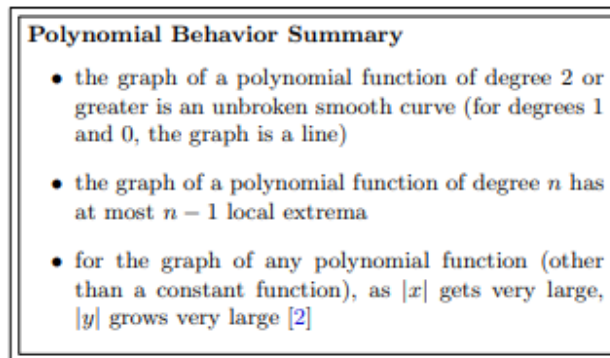


Figure 2: Polynomial Behavior Explained

1.3 Polynomial

Takes the form:

$$y = a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$$

2 Work on PSL 3