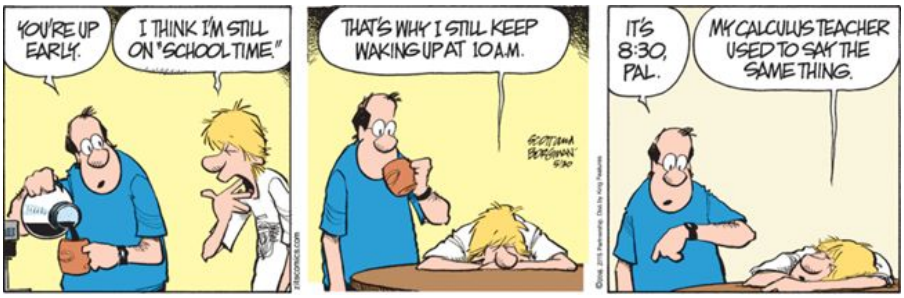
Name: _____

Calculus

Unit 1: Analyzing Functions



"Do not worry about your difficulties in Mathematics. I can assure you mine are still greater."
– Albert Einstein

Overview:

Welcome back from summer break! I hope you had more than enough time to relax before we continue with the next step in our mathematical journey: Calculus. While all Mathematics courses so far have been exercises in understanding and modeling our world, this will be the first time you will find yourself connecting concepts from all over to address and simplify seemingly impossible questions and tasks. While we have been building your vocabulary for the past decade, it's now time to begin creating elegant mathematical sentences.

In this first unit, you will begin by working on a problem which demonstrates one of the many questions which calculus was invented to solve, though we will be using past knowledge and geometry to approximate our results. We will then review various types of functions, such as piecewise-defined, composite, and inverse functions. As we review, please keep note of which concepts are still confusing! Chances are, the other class will be extensively covering this material in future lessons.

Lessons:

Content Lesson Themes

___ 1.1.1 Volumes of Standard Solids, Equation of a Line

___ 1.2.1 Continuity, Domain and Range

___ 1.2.2: Asymptotes, Synthetic Division

___ 1.2.3: Approach Statements

___ 1.2.4: Composite Functions, Inverse Functions

Google Classroom Code: ykm65

Assignments	Due Date (Beginning of Class)
8/26-8/30: **Learning Objective:** I will work with my partners to approximate the solution to a classic Calculus problem. ___ ***1)*** **Group Activity: *Freeway Fatalities* -** As a group, analyze two graphs of a truck's speed and position on a freeway as a function of time and make conjectures on how they relate to each other. ___ **Lesson Notes - *Volumes of Standard Solids, Equation of a Line*** - See google classroom for video. Take notes in your notebook for full credit. ___ ***2) Individual Work (1.1.1)*** **-** 1-2 to 1-8 ___ ***3) Group Problem Solving (1.2.1)*** **-** 1-11, 1-12, 1-14, 1-15, 1-19 ___ ***Lesson Notes - What is Continuity? // Domain and Range*** **-** See google classroom for video. Take notes in your notebook for full credit. ___ ***4) Individual Work (1.2.1)*** **-** 1-20 to 1-26	**Thurs, 8/29** **Thurs, 8/29** **Thurs, 9/5** **Thurs, 9/5**
9/2-9/6: **Learning Objective:** I will refine my understanding of functions by accurately defining a function's continuity, domain, range, and end behavior. ___ ***5)*** **Group Problem Solving (1.2.2): End Behavior -** 1-29 to 1-33 ___ **Lesson Notes - *Asymptotes, Synthetic Division* -** See google classroom for video. Take notes in your notebook for full credit. ___ ***6)*** **Individual Work (1.2.2):** 1-36 to 1-38, 1-40, 1-41, 1-42	**Mon, 9/9** **Mon, 9/9**
9/9-9/13: **Learning Objective:** I will explore the holes or asymptotes in graphs of functions, as well as identify the significance between inverse and composite functions ____ **Lesson Notes - *Approach Statements* -** See google classroom for video. Take notes in your notebook for full credit. ____ ***7) Group Problem Solving (1.2.3): What Happens in the Middle?*** **-** 1-44, 1-46, 1-47, 1-48, 1-49, 1-50 ____ ***8) Individual Work (1.1.5)*** **-** 1-51, 1-52, 1-54, 1-55, 1-56 (choose 2), 1-57, 1-60 ____ **Lesson Notes - *Inverse Functions, Composite Functions* -** See google classroom for video. Take notes in your notebook for full credit. ____ ***10) Group Problem Solving (1.2.4): What is a Composite Function?*** **-** Complete the following questions: 1-61, 1-63, 1-64, 1-65, 1-67 ____ ***11) Individual Work (1.2.4)*** **-** 1-68, 1-69, 1-70, 1-71, 1-72, 1-74, 1-75	**Thurs, 9/12** **Thurs, 9/12** **Mon, 9/16** **Mon, 9/16**