Name:
Teacher:
Period:
Due Date:

Be Good
Why>How>What

NEWT Calculus
Summer Homework
Overview

# Welcome to Calculus!

Hello. Calculus is the study of change. On a geological scale, it's a relatively new math, developing around the end of the 17th century (with complex math dating back to 3000 BC). It was developed (somewhat) independently between Isaac Newton and Gottfried Leibniz. Now, the thing we don't really realize, is that calculus was developed around the start of the Age of Enlightenment. This, indeed, is not a coincidence. Isaac Newton's study of the infinitely large and the infinitesimally small fits hand-in-hand with John Locke's study of the idea that we were born as neither good nor evil, rather *tabula rasa*, blank slates. Yes, this will be great.

## Overview

Every two weeks, you will be expected to complete a 10 question online quiz graded for accuracy and a short written assignments to be turned in on turnitin.com.

In an effort to save paper, all quizzes can be found on the wiki. Paper copies available on request.

## Turnitin.com Info

Class ID: 15528220
Password: horsigans

## Multiple Choice

### The URLs:

The online quizzes can be found here (all due dates are by 11:59pm of the day listed):

| | |
|---|---|
| Week 1 (July 10th, 2017) | https://goo.gl/VYvaaQ |
| Week 2 (July 24th, 2017) | https://goo.gl/qa5xHQ |
| Week 3 (August 7th, 2017) | https://goo.gl/V0hsjy |
| Week 4 (August 21st, 2017) | https://goo.gl/Jz3kCp |

### Help:

Check the wiki page two weeks before every due date for a video with instructions on how to do the content and one free answer. Also, begin the habit of reaching out for help with any questions to jmadonna@noblenetwork.org.

## Writing Expectations

For every question:

- Answers must be **one to two paragraphs**.
- Use examples, use pictures. Imagine you were writing a book about math for someone who hadn't ever seen what you were talking about.
- All questions should be answered pulling from all four domains of mathematics: graphically, numerically, analytically, and verbally.
- All written work will be submitted exclusively to turnitin.com. Anything not on the digital copy of your paper cannot be counted. All equations and equations should be included and drawn in-line (or photographed and included).
- All sources and all graphics **must be cited** (this includes your own drawings). Research is heavily encouraged.

## Writing Prompts on the back of this page!

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# Writing Prompts

## Week 1 (Due July 10th, 2017)

A scholar, Ivan, is running through some calculations with money and notices something astonshing:

$$\begin{aligned} \$1 &= 100¢ \\ &= 10¢ \times 10¢ \\ &= \$\left(\frac{1}{10}\right) \times \$\left(\frac{1}{10}\right) \\ &= \$\left(\frac{1}{100}\right) \\ &= 1¢ \end{aligned}$$

Knowing that \$1 does not equal 1¢, what was Ivan's mistake?

## Week 2 (Due July 24th, 2017)

A scholar, named Mitya, did the following work: $\frac{x+4}{x} = \frac{\cancel{x}+4}{\cancel{x}} = 4$ . Why is this incorrect?

## Week 3 (Due August 7th, 2017)

The $x$-intercepts of $y = f(x)$ are $-1, 3,$ and 6. Find the $x$-intercepts of:

a. $y = f(2x)$ b. $y = 2f(x)$ c. $y = f(x+2)$ d. $y = f(mx)$

Compare the appearance of each graph to the appearance of $y = f(x)$

## Week 4 (Due August 21st, 2017)

What is a limit? Describe the difference between $\lim_{x \to c} f(x)$ and $f(x)$. How are limits related to continuity? How are limits calculated?