June 2020

To Advanced Placement Calculus Student,

I congratulate you on accepting the challenge of taking the Advanced Placement Calculus course at Northwestern. I have prepared this packet to give you some information about the course and help you get ready for Calculus.

The Advanced Placement Calculus course offers secondary school students the opportunity to pursue and receive credit for college-level course work at the secondary level. The curriculum that I will follow year is the one that is recommended by The College Board. Their curriculum is based on the premise that college-level material can be taught successfully to able and well-prepared secondary school students. We will cover all of the topics in the Calculus AB curriculum which corresponds to *at least* as much material as a standard first semester course of college Calculus.

One of the focal points of the course is the preparation for the 3 ¼ hour Advanced Placement Calculus AB Examination given in May 2021. This is a national exam that you will be expected to take as one of the requirements of this course. There is a registration fee required of about $94.00 that will be your responsibility. This fee will be collected in September. Please see me if this fee presents a problem for you. The AP Exam is graded on a scale of one to five and the results are used by many colleges and universities for placement purposes. It is possible for you to gain college credit and/or advanced placement as a result of your grade on this test. The Advanced Placement Exam requires the use of a graphing calculator. Students have found it helpful to own a TI -89, but you can get by using the TI-84.

AP Calculus is a rigorous and demanding course. You are among the best math students in the country. You should be proud of that fact and be willing to develop your talents to their fullest. My goal is to help you accomplish that development, but I can only be a guide. It is up to you to put forth the kind of consistent effort necessary to achieve your potential.

Your summer homework assignment is due on the first day of school and will count as a 50 point quiz grade. It will be graded on completion and correctness so put your best effort into each and every problem. You may refer back to your PreCalculus notebook and use Khan Academy for help with any topic.

Have a wonderful and relaxing summer. I am looking forward to delving into the study and exploration of a branch of mathematics which my college Calculus book refers to as "one of the supreme accomplishments of the human intellect." Calculus truly is a fascinating course, and together we will appreciate its complexities, eloquence, and problem solving capabilities.

Sincerely,

Mrs. Jakobsen

Note: If you purchased a TI-89 calculator, you can refer to the tutorial at https://spot.pcc.edu/math/download/calculator/TI89t_handbook.pdf. Begin using your new calculator as you complete the summer assignment so you will start to get familiar with the TI-89.

Your PreCalculus summer assignment will be completed using the website DeltaMath.

Create your own account for DeltaMath.com, clicking "Create Account" then typing in my teacher code: **182564**. You will make a username (email) and password, type your first and last name and select the class AP Calculus 2020-20201 from the dropdown menu. You'll see the assignment titled AP Calculus Summer Assignment 2020.

You may already have an account. If so, then sign into your old account, go to TOOLS then go to MANAGE LOGIN AND TEACHERS. Then they can add my teacher code **182564** and select the class PreCalculus 2020-20201.

If you forgot your password, you can reset it. Try to login in with your email and a random password. After one failed login, a "forgot password" link appears. If you don't get an email, you should check your junk box for the reset link.

If you have any trouble accessing your assignment, email me at djakobsen@nwr7.org. Don't wait until the night before the first day of school to start the assignment because 1. That will not be enough time and 2. I won't be able to help you if you have trouble.

Your summer assignment is a review of the main concepts from Honors PreCalculus. This assignment is due on the first day of school and will count as a 50 point quiz grade. It will be graded on both completeness and accuracy. In DeltaMath, each topic will list the number of problems you must get correct. You can use sample problems and watch videos in Delta Math for help. Have your pencil, paper, and calculator handy as you do this assignment. Some of the topics do not require written work and some do. For the topics that do require written work, first write the name of the topic and then number your work for each problem. If you get stuck and need help, click show solution and take notes on how to do the problem. You can also watch a video and/or look at a sample problem for additional help. If the topic requires 2 correct problems, continue work until you get 2 correct. I will be able to see how many problems you try and whether you get each one right or wrong. Include the written work for the 2 required problems along with any notes you took to help you figure out the topic.

On the first day or school, I will collect your written work. I will use this along with your results in DeltaMath to grade your assignment. I hope that we start school in person in the fall. If we are still online as we start school in the fall, you will upload your written work to Google Classroom.

Here is a list of all of the topics for your summer assignment and which ones require written work. Most of the work will be algebraic. For some topics, your work will be a written explanation. I've also noted the few topics that should be completed without a calculator.

Convert Log Equation to Exponential	
Logarithmic Form	
Logarithmic Form 2	
Log Equations (1st Degree)	yes
Log Equations (2nd Degree)	yes
Solving Natural Log Equations	yes
Condensing Logarithms	
Expanding Logarithms (Level 2)	
Ratios of Special Triangles	
Finding Common Reference Angles	
Exact Values of Trig Functions (All Six)	yes (no calc)
Converting Radians to Degrees	
Convert Degrees to Radians	
Exact Value of Trig Functions (Radians)	yes (no calc)
Equivalent Functions of Angles	

Inverse Trig (Common Angles)	yes (no calc)
Inverse Trig Functions	
Rotate Angle Through Point (Find angle)	yes
Linear Trigonometric Equations	yes
Quadratic Trig Equations (Level 1)	yes
Law of Cosines (SSS)	yes
Law of Sines	yes
Arc Length, Angles and Radius w/ Degrees	yes
Simplifying Rationals	yes
Multiply Rational Expressions (Level 2)	yes
Adding Rational Expressions (Level 2)	yes
Find Vertical Asymptotes Algebraically	yes
Find Horizontal Asymptotes Algebraically	yes (explain)
Finding Holes Algebraically	yes
Determine Features of a Rational Graph	yes

Adding Vectors Graphically	
Magnitude from Initial / Terminal Points	yes
Find Vector Magnitude and Direction	yes
Simplifying the Difference Quotient	yes
Finding Limits From a Table (Type 1)	
Finding Limits to Infinity From a Table	
Finding Limits Graphically (One Sided)	
Finding Limits Graphically (Type 1)	
Finding Limits Graphically (Type 2)	
Finding Limits Graphically (Reverse)	
Vertical and Horizontal Asymptotes as Limits (Graphically)	
Limits of Piecewise Functions	yes
Limits of Rational Functions	yes
Limits to Infinity (Type 1)	yes (explain)
Limits to Positive or Negative Infinity	
Types of Discontinuities (Graphically)	

Demonstrating Continuity from a Graph	
Continuity	yes
Average Rate of Change from a Graph (Draw Line)	
Slope of Secant Lines	yes
Write Derivative as a Limit ($h \to 0$ only) (single)	
Write Derivative as a Limit	
Slope of Tangent Lines	

I look forward to working with you next year! *Mrs. Jakobsen*