Dear VA Pre-Calculus Students Who Intend to take AP Calculus BC (Fall 2021 with approval)–

Last school year, you enrolled in the PCCS Virtual Academy. As you well know, your Pre-Calculus coursework was provided by Michigan Virtual. Because of the difference in curriculum, there are some important concepts that you will need to learn about prior to taking AP Calculus BC.

The following page has an "assignment sheet" with materials that you will need to learn on your own over your summer break. These units are taught in PCEP's Honors Pre-Calculus course and are necessary for your progression into AP Calculus BC. To make the most of this learning module and start the semester off right, we recommend that you spend some quality time with the packet over the summer. Do not try to finish it before school is out for the summer - we want the topics to be fresh in your minds for the fall! Do not attempt to do it all the night before the first day of classes - it will not be possible!

Don't fake your way through the practice problems. If you find yourself needing some assistance, do not hesitate to use the web for your assistance! The Khan Academy has excellent resources for all of these topics. We want to emphasize that the concepts in this module will be used throughout the upcoming year and understanding these concepts will greatly aid in your success.

Once you have completed this work, you will need to also complete the summer math packet for Honors Pre-Calculus to AP Calculus BC. That summer math packet is available on the PCEP website, under summer math packets, but you can also access it [here](). You will be submitting that, to your teacher in the fall, for a grade.

Good luck!

Date Completed	Lesson Details	HW Assignment/Practice Problems
	Pre-Calc Chapter 11 Notes – *Click* here *to print a blank copy of the notes.* *You should fill these out as you watch each lesson.*	
	11.1 Notes – Introduction to Limits *Click on each link to watch the video:* *Lesson 11.1A and Lesson 11.1B*	**Worksheet 11.1** *Answer Key*
	11.2 Notes – Techniques for Evaluating Limits *Click on each link to watch the video:* *Lesson 11.2A and Lesson 11.2B*	**Worksheet 11.2** *Answer Key*
	11.3 Notes – The Tangent Line Problem *Click on each link to watch the video:* *Lesson 11.3A and Lesson 11.3B*	**Worksheet 11.3** *Answer Key*
	11.4 Notes – Limits at Infinity and Limits of Sequences *Click on each link to watch the video:* *Lesson 11.4A and Lesson 11.4B*	**Worksheet 11.4** *Answer Key*
	11.5 Notes – The Area Problem *Click on each link to watch the video:* *Lesson 11.5A and Lesson 11.5B*	**Worksheet 11.5** *Answer Key*
	Calculus C1.3 & Chapter C2 Notes – *Click* here *to print a blank copy of the notes.* *You should fill these out as you watch each lesson.*	
	Calculus 1.3 Notes – Squeeze Theorem *Click on each link to watch the video:* *Lesson C1.3*	**Worksheet C1.3** *Answer Key*
	Calculus 2.2 Notes – Basic Differentiation Rules and Rates of Change *Click on each link to watch the video:* *Lesson C2.2A and C2.2B*	**Worksheet C2.2** *Answer Key*
	Calculus 2.3 Notes – *The Product and Quotient Rules and Higher Order Derivatives* *Click on each link to watch the video:* *Lesson C2.3A and C2.3B*	**Worksheet C2.3** *Answer Key*
	Calculus 2.4 Notes – The Chain Rule *Click on each link to watch the video:* *Lesson C2.4A and C2.4B*	**Worksheet C2.4** *Answer Key*
	Calculus 2.5 Notes – Implicit Differentiation *Click on each link to watch the video:* *Lesson C2.5A and C2.5B*	**Worksheet C2.5** *Answer Key*
	Calculus 2.6 Notes – Related Rates *Click on each link to watch the video:* *Lesson C2.6A and C2.6B*	**Worksheet C2.6** *Answer Key*

Some words of advice….

- *Display all* **WORK***, including sketches when appropriate, for each problem. –* **THE WORK IS REQUIRED TO RECEIVE CREDIT** *when you return to the classroom in the fall. It is best to develop these important habits now while you are practicing.*
- *Pre-***READ, READ,** *re-***READ**
- *Always report* exact *answers when possible.*
- *Rounding, when not specified otherwise in the directions, should be to the* nearest thousandth*.*
- *When the directions say "Use a graphing utility to graph … ", always sketch the graph. Label it clearly with the name of the function, the values of the window used, and the key points.*

Section 11.1   Introduction to Limits
I can...
- *understand the limit concept.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use the definition of a limit to estimate limits.*   __ *Mastered*   __ *Practice*   __ *Help*
- *determine whether limits of functions exist.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use the definition of a limit to estimate limits.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use properties of limits and direct substitution to evaluate limits.*   __ *Mastered*   __ *Practice*   __ *Help*

Section 11.2   Techniques for Evaluating Limits
I can...
- *use the dividing out technique to evaluate limits of function.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use the rationalizing technique to evaluate limits of functions.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use technology to approximate limits of functions graphically and numerically.*   __ *Mastered*   __ *Practice*   __ *Help*
- *evaluate one-sided limits of functions.*   __ *Mastered*   __ *Practice*   __ *Help*
- *evaluate limits of difference quotients from calculus.*   __ *Mastered*   __ *Practice*   __ *Help*

Section 11.3   The Tangent Line Problem
I can...
- *understand the tangent line problem.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use a tangent line to approximate the slope of a graph at a point.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use the limit definition of slope to find exact slopes of graphs.*   __ *Mastered*   __ *Practice*   __ *Help*
- *find derivatives of functions and use derivatives to find slopes of graphs.*   __ *Mastered*   __ *Practice*   __ *Help*

Section 11.4   Limits at Infinity and Limits of Sequences
I can...
- *evaluate limits of functions at infinity.*   __ *Mastered*   __ *Practice*   __ *Help*
- *find limits of sequences.*   __ *Mastered*   __ *Practice*   __ *Help*

Section 11. 5   The Area Problem
I can...
- *find limits of summations.*   __ *Mastered*   __ *Practice*   __ *Help*
- *use rectangles to approximate and limits of summations to find areas of plane regions.*   __ *Mastered*   __ *Practice*   __ *Help*

Section C1.3   Evaluating Limits Analytically
I can…
- recognize and utilize properties of limits.   __ Mastered   __ Practice   __ Help
- apply strategies for finding limits, which includes cancellation and   __ Mastered   __ Practice   __ Help
  rationalizing techniques.
- apply the Squeeze Theorem to solve limits.   __ Mastered   __ Practice   __ Help

Section C2.2   Basic Differentiation Rules and Rates of Change
I can…
- use and apply strategies for finding limits which involve the constant rule.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve the power rule.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve the constant   __ Mastered   __ Practice   __ Help
  multiple rule.
- use and apply strategies for finding limits which involve the sum   __ Mastered   __ Practice   __ Help
  and difference rule.
- use and apply strategies for finding limits which involve the sine   __ Mastered   __ Practice   __ Help
  and cosine functions.
- use limits to find rates of change.   __ Mastered   __ Practice   __ Help

Section C2.3   The Product and Quotient Rules and Higher Order Derivatives
I can…
- use and apply strategies for finding limits which involve the product rule.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve the quotient rule.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve all 6 trigonometric   __ Mastered   __ Practice   __ Help
  functions.
- use and apply strategies for finding limits which involve finding higher   __ Mastered   __ Practice   __ Help
  order derivatives.

Section C2.4   The Chain Rule
I can…
- use and apply strategies for finding limits which involve the chain rule.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve the general   __ Mastered   __ Practice   __ Help
  power rule.
- use and apply strategies for simplifying derivatives.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve the chain rule   __ Mastered   __ Practice   __ Help
  and trigonometric functions.

Section C2.5   Implicit Differentiation
I can…
- distinguish between implicit and explicit differentiation.   __ Mastered   __ Practice   __ Help
- use and apply strategies for finding limits which involve implicit   __ Mastered   __ Practice   __ Help
  differentiation.

Section C2.6   Related Rates
I can…
- find related rates.   __ Mastered   __ Practice   __ Help
- problem solve with related rates.   __ Mastered   __ Practice   __ Help