Summer Work Packet for MPH Math Classes

Students going into
AP Calculus BC
Sept. 2020

Name:_____

This packet is designed to help students stay current with their math skills.

Each math class expects a certain level of number sense, algebra sense and graph sense in order to be successful in the course.

These problems need to be completed on a separate sheet of paper (unless space has been provided) by September 11th and expect a quiz/test on the material in the first quarter. Be sure to show all work. If you have any questions, please email Mr. Ochs at jochs@mphschool.org or Mrs. Meehan at dmeehan@mphschool.org.

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The TI 84+ calculator is good for use in AP Calculus. It does everything you are allowed to use it for on the AP Exam.

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There are three main parts to this packet. Please follow the set of instructions for each part.

Part I

Instructions:
1. Go to:
   https://www.khanacademy.org/math/old-integral-calculus/series-ic#sequences-tut-ic
2. Scroll down and click on "Learners, start here."
3. Under **Math by subject,** click "AP Calculus BC."
4. Scroll down until you reach the section that says "Sequences & series intro."

You will complete lessons and practice exercises from topics *off the menu.* All the topics with the videos (lessons) you are responsible for watching are listed below, followed by their corresponding practice exercises.

Complete the practice exercise on a separate sheet of paper. These will be collected the first week of school. Please let me know if you have any questions.

Sequences Review:
1. Videos: "Sequences Intro", "Worked Example Sequence: Explicit Formula", "Worked Example Sequence: Implicit Formula"
2. Practice: "Sequences Review"

Infinite Sequences:
1. Videos: "Convergent and Divergent Sequences", "Worked Example: Sequences Convergent/Divergent"
2. Practice: "Sequence Convergent/Divergent"

Series Review:
1. Videos: "Sigma Notation for Sums", "Worked Example: Sigma Notation", "Worked Example: Sigma Notation ($n \geq 2$)"
2. Practice: "Sigma Notation Intro"

Partial Sums:
1. Videos: "Partial Sums Intro", "Partial Sums: Formula for n^{th} term from partial sum", "Partial Sums: term value form partial sum"
2. Practice: "Partial Sums Intro",

Part II

Instructions: Complete these questions on integration on a separate sheet of paper. Make sure to show all work.

1. $\int x^e \, dx$

2. $\int \frac{3x^2 - 5x + 8}{x^2} \, dx$

3. $\int \frac{3x^2}{x^3 + 1} \, dx$

4. $\int \frac{\sin(\sqrt{x})}{\sqrt{x}} \, dx$

5. $\int \frac{3x^5}{\sqrt{x^3 - 2}} \, dx$

6. $\int \frac{x}{1 + x^2} \, dx$

7. $\int \frac{2x}{1 + x^4} \, dx$

8. $\int_{-1}^{4} |x - 2| \, dx$

Part III

Barron's AP Calculus Flash Cards, 3rd Edition by David Bock M.S will need to be purchased to complete the summer assignment for AP Calculus BC **ISBN-13:** 978-1438078809 or **ISBN-10:** 1438078803. To be successful in AP Calculus BC you must be very confident and comfortable with concepts and topics learned in AP Calculus AB. We will spend a minimal amount of time going over material previously learned in AP Calculus AB.

This set of Calculus flash cards will help you review the key terms, facts and equations that you need to know to be successful in this upcoming year. Please read through all of the cards marked AB. You will need to know/memorize ALL of the cards marked AB. You will find that many of the flashcards are bi-directional – you can study by looking at either side of the card and thinking about what must be on the reverse side. Make sure you feel comfortable recalling information in both directions.

In the set of cards you will also find sample problems with answers on the reverse side. Over the course of the summer you will need to work through **ONLY** the sample problems that are marked **AB**. These problems need to be completed on a separate sheet of paper by the first day of class. Be sure to show all work.

Students can expect a quiz/test on the material contained in the flashcards and covered in the AP Calculus AB curriculum during the first marking period.

Students will need a TI-84$^+$ calculator for AP Calculus BC.

Please contact me or Mrs. Meehan with any concerns or problems!

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