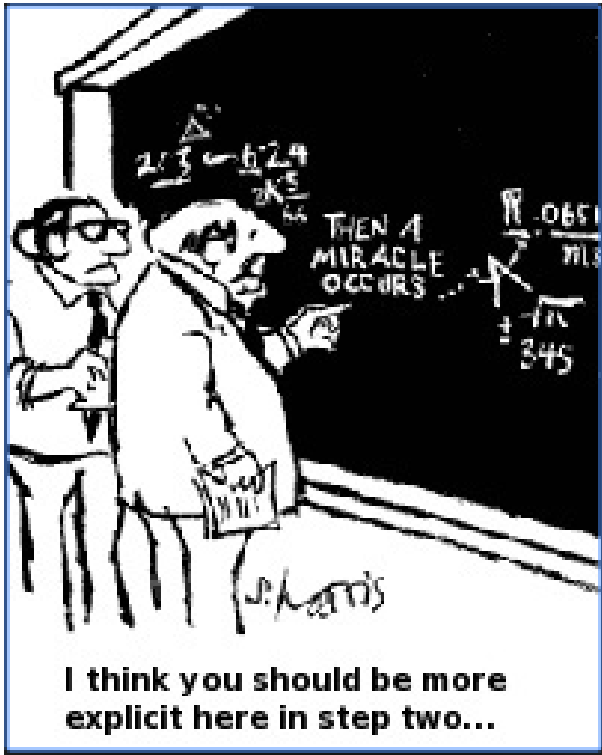




ARCHBISHOP CURLEY

HIGH SCHOOL

AP Calculus BC Summer Preparation 2019



Name:

Archbishop Curley Math Department 2019

Welcome to AP Calculus BC. This will be the toughest class yet in your mathematical careers, but the benefit you will receive by having this experience in high school is immense. Because of the unique nature of this class, it is very important that you are ready to start working on the **first day**. We will NOT be reviewing the material in this packet. We will revisit the topics but at a level beyond Calculus I. We will be moving through this material very quickly so we will have enough time to tackle more advanced BC topics.

Expected from you is a certain level of independence by anyone taking AP Calculus. Your first opportunity to demonstrate your capabilities and resourcefulness is through this summer work packet which will help you maintain/improve your skills. This packet is a requirement for those entering AP Calculus BC and is **due the first day of class**.

If you feel that you need help with some of these topics, the best resource may be the internet. There are great sites where you can just type in the topics to get help. Using [youtube.com](https://www.youtube.com), [khanacademy.org](https://www.khanacademy.org), and [edx.org](https://www.edx.org) not only will help you on this packet this summer, but will be referenced often throughout the upcoming school year. This summer assignment includes important precalculus topics as well and may include concepts you have not seen before. Use your text or other resources to work on challenging questions. ALL PARTS MUST BE ATTEMPTED.

Details of Assignment:

Part A: *Textbook Review Practice*

Part B: *Trigonometry Review*

Part C: *Online Work and Test*

Textbook: The summer assignment is from the text that you must sign out from me before school ends.

Part A: Textbook Review Exercises***Chapter 1 – Prerequisites for Calculus (PreCalculus Review)***

Review Exercises: p 55-56, Q 28-38 even and Q 41, 42, 45, 46

Chapter 2 – Limits and the Rate of Change

Review Exercises: p 96-97, Q 8-20 even; Q 29, 31, 33, 35, 39, 46, 48

Chapter 3 – Properties of Derivatives

Review exercises: p 148-155, Q 10 – 22 even; Q 36, 40, 48, 72, 74, 81

Chapter 4: - More Derivatives

Review Exercises: p 186-188, Q 9-29 every other odd; Q 34-42 even; Q 70, 72

Chapter 5 – Applications of Derivatives

Review Exercises: p 260-263, Q 6-12 even; Q 36, 37, 38, 54, 62, 70, 71, 72

Part B: Trigonometry Review

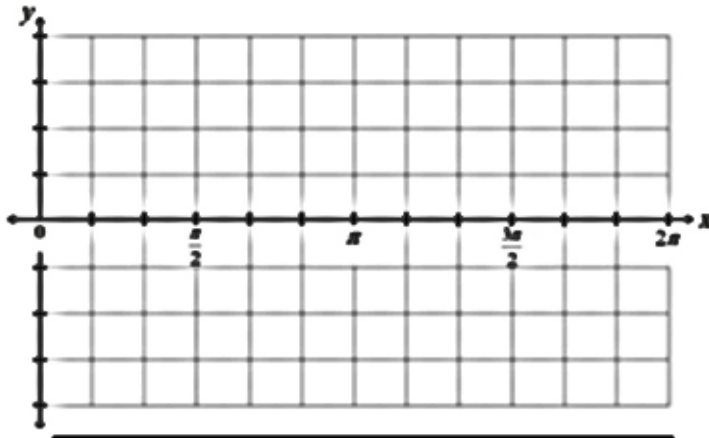
Sketch the graphs using the intercepts, amplitude, period, frequency and midline.

1. $f(x) = 2 \sin \theta + 1$

Intercepts:

Amplitude:

Period:

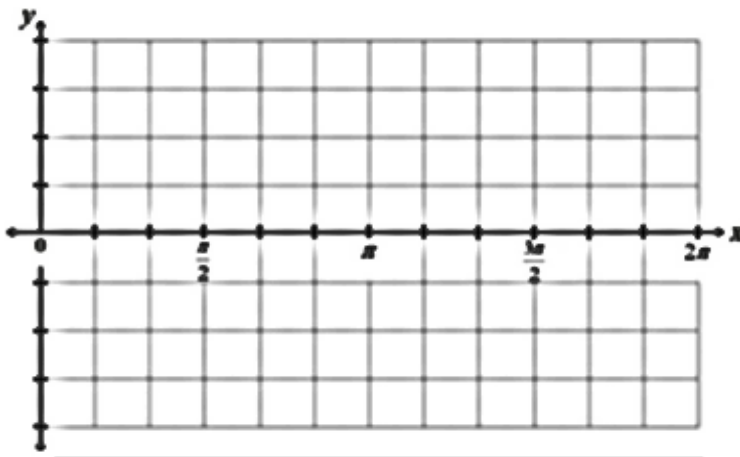


2. $f(x) = 2 \cos(2\theta)$

Intercepts:

Amplitude:

Period:



3. Find the exact value of each of the other trigonometric functions of the angle θ (without finding θ) given that $\sin \theta = -\frac{2}{3}$ and $\cot \theta > 0$

$\cos \theta =$

$\csc \theta =$

$\sec \theta =$

$\tan \theta =$

$\cot \theta =$

4. For the following problems, find the exact values of each of the trigonometric functions:

a. $\sin\left(\frac{5\pi}{4}\right)$

b. $\cos\left(\frac{7\pi}{4}\right)$

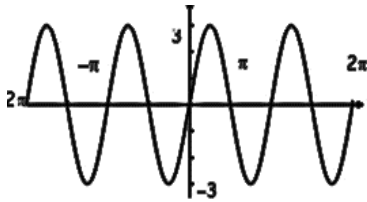
c. $\tan\left(\frac{5\pi}{3}\right)$

d. $\cot\left(\frac{11\pi}{6}\right)$

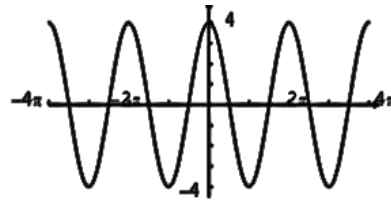
e. $\sec\left(-\frac{3\pi}{24}\right)$

f. $\tan(-2\pi)$

5. Write an equation for each function.



Equation: _____

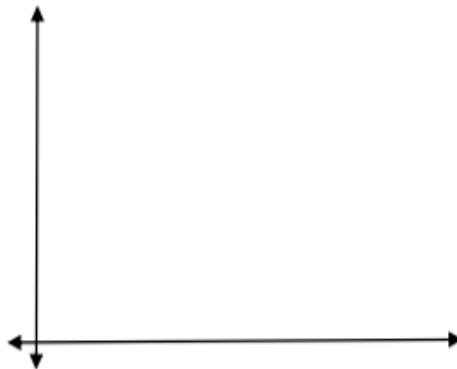


Equation: _____

6. The number of hours of daylight recorded during 2014 in a town can be modelled by a sinusoidal function. The largest number of daylight hours occurred on June 21st with 16.2 hours of daylight. The smallest number of daylight hours occurred on December 21st with 7.8 hours of daylight.

a) Write a sinusoidal equation to model the hours of daylight in the town.

b) Sketch the function.



c) On how many days of the year will the number of daylight hours exceed 12 hours?

7. Simplify $(\csc(x) - \tan(x))\sin(x)\cos(x)$

8. Verify: $\frac{\sin \theta - \csc \theta}{\cos \theta - \cot \theta} = \frac{\cos \theta}{1 - \sin \theta}$

9. Solve the equation $2\sin^2(x)\cos(x) = \cos(x)$ algebraically.

10. Find all the exact solutions to $2\sin^2(x) + 3\sin(x) - 2 = 0$ on the interval $[0, 2\pi)$.

Part C: Online Work

Join our class on Khan Academy. If you do not have an account, then open one with your curley email. Otherwise, use your current account and join my class. Be sure to join on or before August 1st. Class code: ZX66HCR7

I will assign specific topics as the course progresses, but initially, the khan academy work is *optional* and to be used at your discretion to help review and to help complete your summer work.

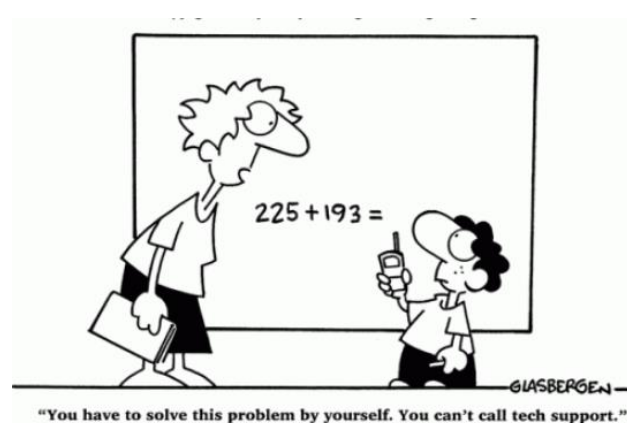
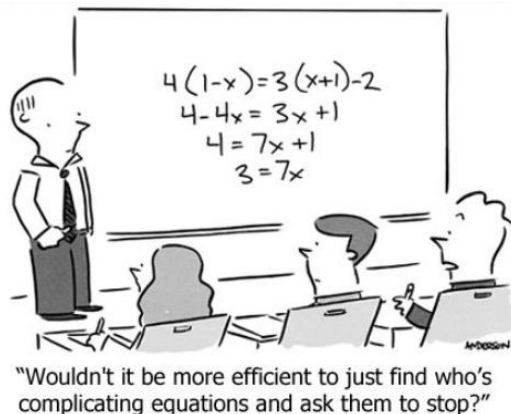
Download the app for EDX. We will be using some of their free course materials for topic foci and for review.

Part D: Online Test

You will complete a test on your summer material on EDULASTIC. I will provide further information by email at the beginning of August. The results on this test will help determine, to some extent, the pacing of our first quarter. This test will be completed before the first day of class in September.

You are responsible for reviewing/relearning precalculus, geometry and basic Calculus topics you have previously studied. The BC course requires a strong background in trigonometry and analytic geometry, as well as in advanced mathematics and beginning Calculus.

You should already have a TI nspire CX CAS calculator and be comfortable using it. If you do not have a CAS, please come to sign one out for the year. You can still use your non-CAS or TI-84 calculator, but there are some functions that can only be performed on a CAS.



Happy Calculus-ing!