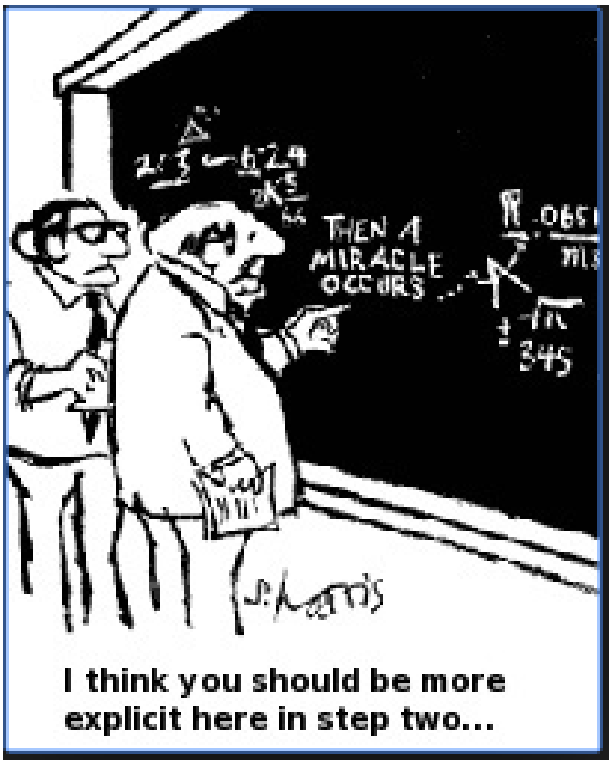
ARCHBISHOP CURLEY

HIGH SCHOOL

AP Calculus BC Summer Preparation 2020



Name:

_____

Archbishop Curley Math Department 2020

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 and high level of commitment. 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**.

Details of Assignment:

Part A: ***Textbook Review Practice*** *– complete on separate paper or notability.*

Part B: ***Online Work***

(1) Join our class on google classroom. Use your curley email. **Class Code: ez54ovz**

(2) Join our class on Khan Academy. If you do not have an account, then open one with your curley email. **Class code: ZX66HCR7**

For students who have taken AB Calculus*, you can test out of any of the chapter reviews for chapters 2 through 5 below by taking the unit test for that chapter on Khan Academy.*

Part C: ***Trigonometry Review*** *– Complete on separate paper or notability.*

Part D: ***Online Test***

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 C: Trigonometry Review

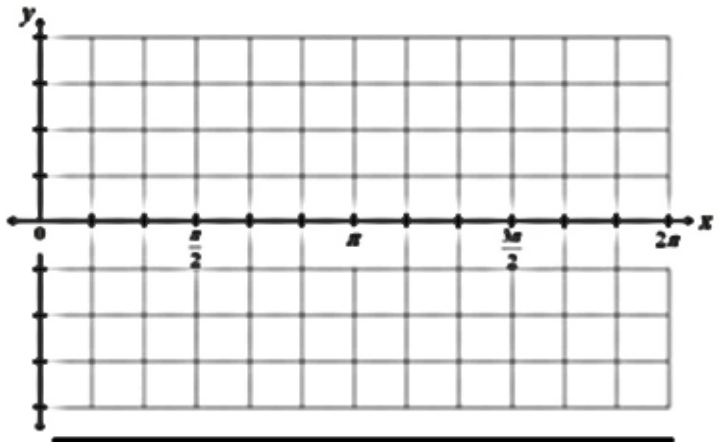
Sketch the graphs using the intercepts, amplitude, period, frequency and midline.

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

Intercepts:

Amplitude:

Period:

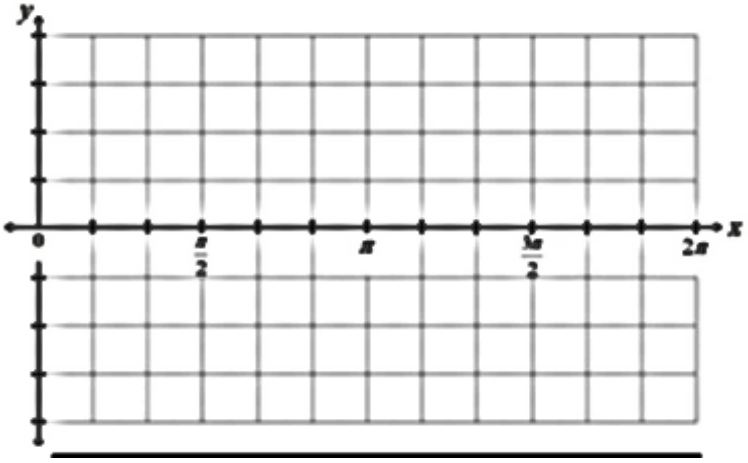


2. $f(x) = 2\cos(2\theta)$

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. $\sin(\frac{5\pi}{4})$ b. $\cos(\frac{7\pi}{4})$ c. $\tan(\frac{5\pi}{3})$

d. $\cot(\frac{11\pi}{6})$ e. $\sec(-\frac{3\pi}{24})$ f. $\tan(-2\pi)$

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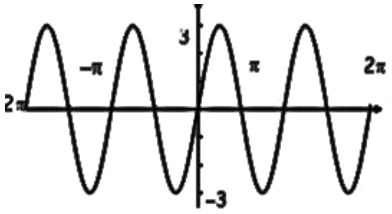
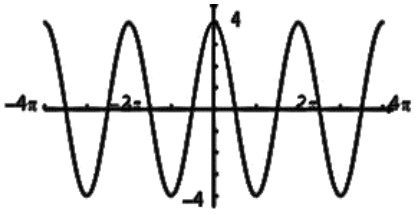
5. Write an equation for each function.





Equation: _____ Equation:_____

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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 78 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 $\left(\csc(x)-\tan(x)\right)\sin(x)\cos(x)$

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

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 $[0,2\pi)$.

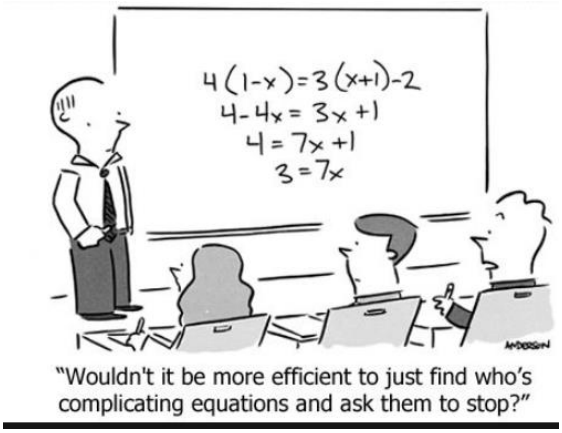
Part D: Online Test

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.

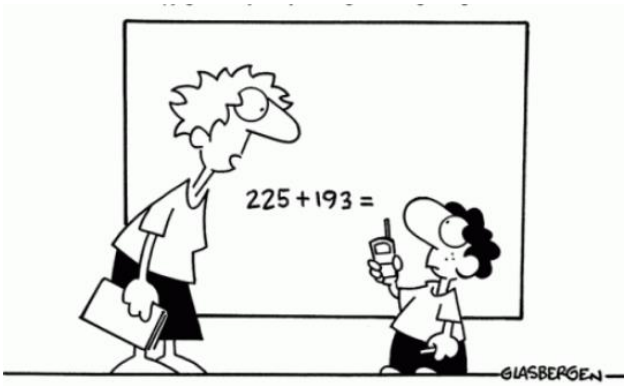
You are responsible for reviewing/relearning precalculus, geometry and basic Calculus topics you have previously studied. The BC course requires a strong background in trigonometry and analytic geometry, as well as in advanced mathematics and beginning Calculus.

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.

You should upload your summer work into google classroom as you complete each chapter review. Your Edulastic test will be uploaded here as well. I will be monitoring Google classroom throughout the summer and expect you to be present. Do not leave all of your summer work to the end of the summer, nor should you complete it all now and forget it over the summer. You have 5 chapters to review – space it out, based on which skills you feel you need the most practice with. Take charge of your AP score now by committing to the preparation. I look forward to our class this fall. Don't forget to relax and have fun with other things aside from Calculus (I can't imagine what might be more fun than Calculus, but that's just me).



"Wouldn't it be more efficient to just find who's complicating equations and ask them to stop?"



"You have to solve this problem by yourself. You can't call tech support."

Happy Calculus-ing!