AP Calculus BC Summer Assignment – Summer 2021
Mr. Donaghy

Welcome to my calculus class. I'm sure that you will enjoy calculus as much as I do. The purpose of the summer assignment is to keep the AP Calculus AB concepts fresh so that you can use them for this class.

Since you all had me for Calculus AB, you know that you will work hard but you will learn a lot have some fun! I'm looking forward to the class.

Here are the details for the assignment.

Textbook: The summer assignment is from the text that you must buy for the class. (you should already have this book)

Calculus: Graphical, Numerical, Algebraic 5th ed by Finney, Demana, Waits, Kennedy
ISBN-13: 9780133311617

I will collect the problems on the first day of class. No late assignments will be accepted. The only exception for a late assignment is if you are not in school due to illness. (in other words, don't do the assignment the day that it is due!) I will grade the assignment as follows:
    50% on effort, neatness and completeness
    50% based on graded problems. I will select 10 problems to grade.

Assignment:
(all problems are from the textbook)
Problems: page 97: 2-20 (even), 43,44
            Page 150: 2-16 (even), 46,48,60
            Page 189: 2-20(even), 38,40,42,62
            Page 262: 6,8,10,36,38
            Page 323: 16-28(even) ,34,40,42,46
            Page 379: 2-26(even), 38-42(all),52
            Page 438: 6-14 (even), 20-26 (even)

Plus do the trigonometry review on the following page.

Feel free to email me with any questions: mdonaghy@whschool.org and I will see you in September!

Mr. Donaghy

Directions: Solve each problem on separate sheet of paper. Please show all of your work. Do not use a calculator except where indicated. Hint: A calculator will not help you to solve most of the problems.

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

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

   a. $\sin\left(\dfrac{5\pi}{4}\right)$ c. $\cos\left(\dfrac{7\pi}{4}\right)$ e. $\tan\left(\dfrac{5\pi}{3}\right)$

   b. $\cot\left(\dfrac{11\pi}{6}\right)$ d. $\sec\left(-\dfrac{3\pi}{2}\right)$ f. $\csc(-2\pi)$

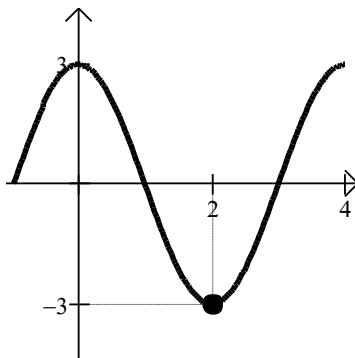3. Find all angles θ for which $\cos\theta = -\dfrac{\sqrt{3}}{2}$ and $0 < \theta < 2\pi$.

4. Solve each equation by using facts about the values of the trigonometric functions. In each case write the complete solution set. Use the graph of the function as an aid.

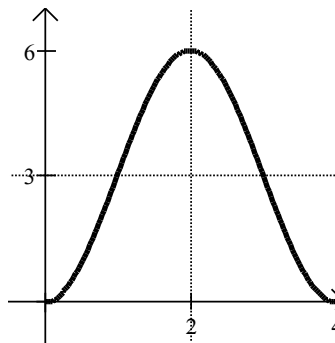   a. $\cos x = \dfrac{\sqrt{3}}{2}$ b. $\tan x = \dfrac{1}{\sqrt{3}}$

5. Without a calculator, graph one period of the function $f(x) = 4\cos\left(t + \dfrac{\pi}{4}\right)$.

6. Find formulas for the trigonometric functions represented in the following graphs:

   a.   b.

7. Solve the following equations. If a solution exists, **<u>give the general solution</u>**. If a solution does not exist, give a reason. Check your answers graphically with a calculator.

   a. $\sin x = \dfrac{\sqrt{2}}{2}$ b. $\cos(3\theta) = \dfrac{1}{2}$ c. $\sin\left(\dfrac{\theta}{8}\right) = -\dfrac{\sqrt{3}}{2}$

8. Given that $\sin x = \dfrac{7}{25}$, $\pi/2 < x < \pi$, find the exact values of $\sin 2x$, $\cos 2x$ and $\tan 2x$. Check your answer with a calculator.

9. Solve the following equations, checking your answers algebraically and graphically (with a calculator).

   a. $5\cos x - \cos x \sin x = 0$ b. $2\sin^2 x - \sin x - 1 = 0$`