12th Grade Assignment – Week #1

Announcements:
- The central task of the first two weeks will be to review necessary skills from 11th grade.
- Not everything we did last year needs to be reviewed before we proceed into 12th grade material. The **necessary units needing review** are:
    - All three units of *Cartesian Geometry*
    - Two units of *Trigonometry (Part II and Part III)*
    - *Complex Numbers, Part I*
    - *Logarithms* and *Exponential Growth* (from 10th Grade)
- One of the documents you will find in the 12th grade portal is "***Tests from 11th Grade***". This document includes the 11th grade tests from all the units that you need to review.
- Next week's assignment will include a *11th Grade Review Test.* This test will be of normal length (2 pages) and will include problems similar to what appears in the above-mentioned test document. You should take the test before the end of Week #3.

Group Assignment:

for Tuesday
- *The Dog and Boat Puzzle.* Three people, each with their own dog, need to cross a river. There is one boat, which they must use for each crossing. The boat can only take two passengers (dogs or people). They all start out on a small dock on one shore, and have to all end up on the dock located on the other shore. The difficulty is that a dog will get scared and bolt if, at any moment, it is left without its owner, but with another person nearby. So how can they all get across the river? (Notes: The dogs are so clever that a dog (or two dogs together) can navigate the boat even without a person present. Everyone must stay on one of the two docks until everyone is across the river.)
- Help each other out with the problems found in the document *Tests from 11th Grade.*

for Thursday
- *Adding Digits.* If you add the integers (or whole numbers) from 20 to 30, you get 275. But if you add together all the underlined digits of the integers from 20 to 30, you only get 68. Verify that this is true. Now try to answer these questions:
    1) What is the sum of all the digits in the integers from 1 to 100?
    2) What is the sum of all the digits in the integers from 1 to 1,000,000?
    3) What is the sum of all the digits in the integers from 1 to 1,000,000,000,000?
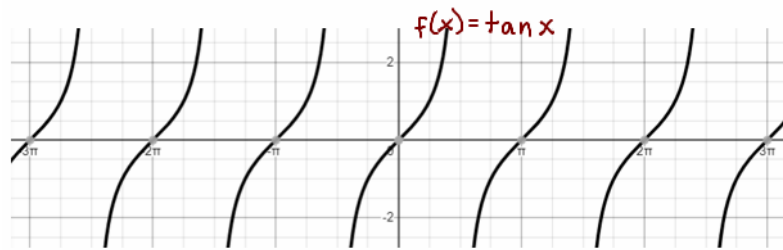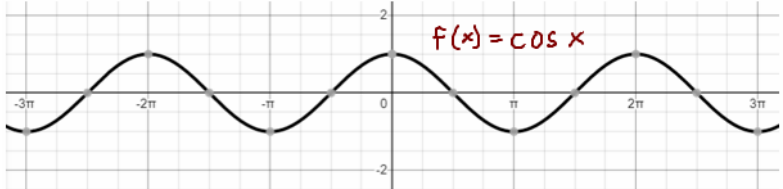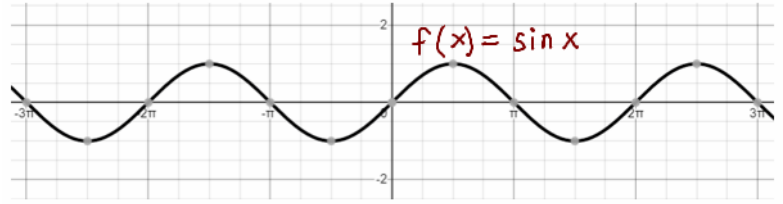- Help each other out with the problems found in the document *Tests from 11th Grade.*

Individual Work
- Again, your major task is to review the necessary material from 11th grade.
  You need to carefully go over the problems found in the document *Tests from 11th Grade.*
- For additional practice, as you need, select workbook problems to work on from the "necessary units needing review" (see above).

Trig Facts

θ	$\sin\theta$	$\cos\theta$	$\tan\theta$
$0°,\ 0$	0	1	0
$30°,\ \frac{\pi}{6}$	$\frac{1}{2}=0.5$	$\frac{\sqrt{3}}{2}\approx0.866$	$\frac{\sqrt{3}}{3}\approx0.577$
$45°,\ \frac{\pi}{4}$	$\frac{\sqrt{2}}{2}\approx0.707$	$\frac{\sqrt{2}}{2}\approx0.707$	1
$60°,\ \frac{\pi}{3}$	$\frac{\sqrt{3}}{2}\approx0.866$	$\frac{1}{2}=0.5$	$\sqrt{3}\approx1.73$
$90°,\ \frac{\pi}{2}$	1	0	∞
$120°,\ \frac{2\pi}{3}$	$\frac{\sqrt{3}}{2}\approx0.866$	$-\frac{1}{2}=-0.5$	$-\sqrt{3}\approx-1.73$
$135°,\ \frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}\approx0.707$	$-\frac{\sqrt{2}}{2}\approx-0.707$	-1
$150°,\ \frac{5\pi}{6}$	$\frac{1}{2}=0.5$	$-\frac{\sqrt{3}}{2}\approx-0.866$	$-\frac{\sqrt{3}}{3}\approx-0.577$
$180°,\ \pi$	0	-1	0

Graphs

$f(x)=\sin x$

$f(x)=\cos x$

$f(x)=\tan x$

The Trig Unit Circle

$\frac{\pi}{2}$, 90° (0, 1)

$\frac{2\pi}{3}$, 120° $\left(-\frac{1}{2},\frac{\sqrt{3}}{2}\right)$

$\frac{\pi}{3}$, 60° $\left(\frac{1}{2},\frac{\sqrt{3}}{2}\right)$

$\frac{3\pi}{4}$, 135° $\left(-\frac{\sqrt{2}}{2},\frac{\sqrt{2}}{2}\right)$

$\frac{\pi}{4}$, 45° $\left(\frac{\sqrt{2}}{2},\frac{\sqrt{2}}{2}\right)$

$\frac{5\pi}{6}$, 150° $\left(-\frac{\sqrt{3}}{2},\frac{1}{2}\right)$

$\frac{\pi}{6}$, 30° $\left(\frac{\sqrt{3}}{2},\frac{1}{2}\right)$

π, 180° $(-1, 0)$

0, 0° $(1, 0)$

$\frac{7\pi}{6}$, 210° $\left(-\frac{\sqrt{3}}{2},-\frac{1}{2}\right)$

$\frac{11\pi}{6}$, 330° $\left(\frac{\sqrt{3}}{2},-\frac{1}{2}\right)$

$\frac{5\pi}{4}$, 225° $\left(-\frac{\sqrt{2}}{2},-\frac{\sqrt{2}}{2}\right)$

$\frac{7\pi}{4}$, 315° $\left(\frac{\sqrt{2}}{2},-\frac{\sqrt{2}}{2}\right)$

$\frac{4\pi}{3}$, 240° $\left(-\frac{1}{2},-\frac{\sqrt{3}}{2}\right)$

$\frac{5\pi}{3}$, 300° $\left(\frac{1}{2},-\frac{\sqrt{3}}{2}\right)$

$\frac{3\pi}{2}$, 270° $(0,-1)$