Precalculus Students,

Test 3 will be Thursday and Friday and November 5/6. To be prepared, you should have done or should do the following:

1. Watched all the videos on Chapter 8.
    https://www.telstarbob.net/bbrown/math1113dailyfall2020.htm
2. Completed all the homework for Chapter 8.
3. Watch the Test 3 Essential Concepts Video https://youtu.be/xTdRnSRLBjA
4. Work the practice test by yourself.
    http://telstarbob.net/bbrown/Precalculus/Test3ReviewProblemsPages.pdf
5. Watch Practice test 3 video if you need help on any problem.
    https://www.youtube.com/watch?v=mLXyd03igQU
6. Ask me any questions or request a Zoom Video Tutoring Session if you need additional help.
7. Be able to establish additional trig identities using the trig identities at the end of this guide. To do this you will need to remember how to use algebraic rules about manipulating fractional expressions.
    For example $\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}, and\ \frac{a}{b} - \frac{c}{d} = \frac{ad-bc}{bd}$
8. Be able to manipulate trig identities and use them in solutions to trig equations. Be able to factor trig equations like $2cos^2\theta + cos\ \theta - 1$ = 0 and solve them for θ.
9. Solve Trig Equations Using Unit Circle – Easiest if you understand unit circle and the solution(s) lie(s) on the unit circle.
10. Solve Trig Equations Using Your Calculator - This is the only way if the solution(s) are not angles readable on the unit circle. **Must have calculator in the correct mode (angles or radians).**
11. Understand that sin θ and cos θ are always <= 1 and >= -1. The absolute value (magnitude) is between 0 and 1.   Because csc θ = 1/sin θ and sec θ = 1/cos θ, csc θ and sec, must always be between 1 and + ∞   and – ∞ and -1.   Graphs below illustrate this.

sin θ

cos θ

csc θ

sec θ
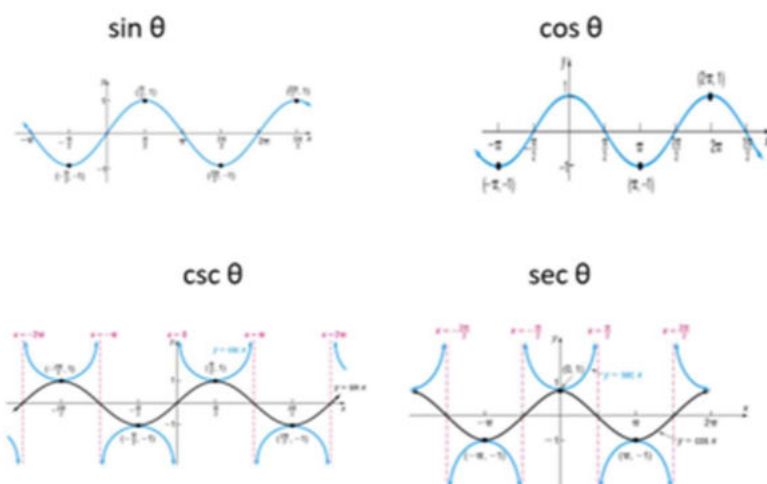
12. Also understand that the value of tan θ and cot θ is between -∞ and +∞. Graphs below illustrate this concept.
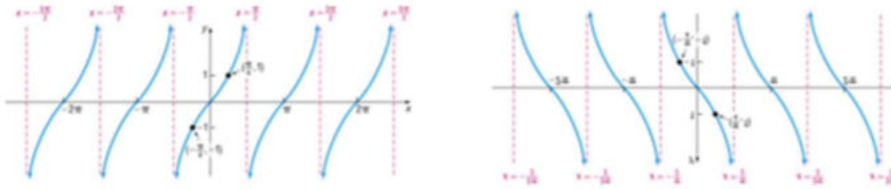
13. Find inverse function f^{-1} of trig function f.
14. Establish trig identities. You can use the identities listed in this guide.
15. Be careful in solving $x^2 = k$ (k is $positive$). $x = \pm\sqrt{k}$. Do not miss half the problem because you forgot this.
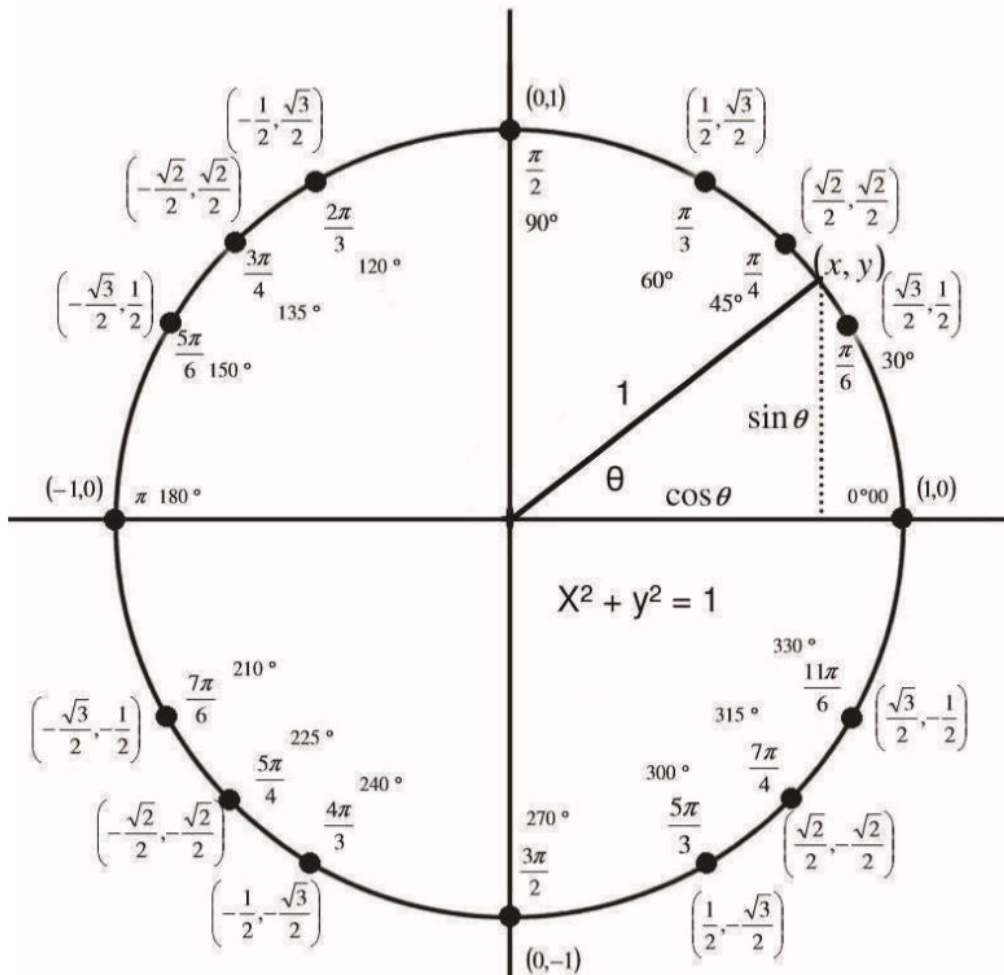
All of these ideas are illustrated in the Practice Test.

On the test, you may have the unit circle and associated formulas at the end of this note. Take the last page with you if you take test on ProctorU. The last page will be attached to tests taken in the ACE.

Good luck,

Dr. Brown

Test 3 Unit Circle and Some Identities Allowed to Be Used by the Student

Some Identities You May Need

Reciprocal Identities

$$\sin x = \frac{1}{\csc x} \qquad \sec x = \frac{1}{\cos x} \qquad \tan x = \frac{1}{\cot x}$$

$$\csc x = \frac{1}{\sin x} \qquad \cos x = \frac{1}{\sec x} \qquad \cot x = \frac{1}{\tan x}$$

Tangent and Cotangent Identities

$$\tan x = \frac{\sin x}{\cos x} \qquad \cot x = \frac{\cos x}{\sin x}$$

Pythagorean Identities

$$\sin^2 x + \cos^2 x = 1$$

$$1 + \tan^2 x = \sec^2 x \qquad 1 + \cot^2 x = \csc^2 x$$

$$s = r\theta$$

$$A = \frac{1}{2}r^2\theta \qquad \text{Remember SOHCAHTOA}$$

$$T = \frac{2\pi}{\omega}$$