

Guided Review for Exam 4

Section 5.2.

1. How do you find the six trig functions of 30, 45 and 60 degree angles? You should either memorize these values or be able to use the unit circle to find them QUICKLY. You will need to find exact values of trig functions on the test without using your calculator.
2. Use right triangle trigonometry to solve applications problems. See assigned homework for examples.

You should be able to find the exact values of expressions whose angles are in Quadrant I. Be sure to simplify the expression completely. The expression could be given in either degrees or radians

ex) $\sin \frac{\pi}{3} \cos \frac{\pi}{4} - \tan \frac{\pi}{4}$

ex) #67, pg 497

From a point A on a line from the base of the Washington Monument, the angle of elevation to the top of the monument is 42.0° . From a point 100 feet away from A and on the same line, the angle to the top is 37.8° . Find the height, to the nearest foot, of the Washington Monument

Section 5.3

1. How do we extend the definition of the six trig functions to apply to any angle?
2. How is the unit circle used find trig functions of angles that are not in the first quadrant?
3. How do you find the trig functions of quadrantal angles?
4. You should be able to do the "exact value" problems without using your calculator.

ex) $\cos \pi \sin \frac{7\pi}{4} - \tan \frac{11\pi}{6}$

ex) $\sin 210^\circ - \cos 330^\circ \tan 330^\circ$

Section 5.4

1. How do we define trig functions of real numbers?
2. What are the reciprocal identities? Ratio identities? Pythagorean identities?
3. Which trig functions are odd, and which are even?
4. You should be able to determine if a function is even, odd, or neither.
5. You should be able to simplify trig expressions using identities.
6. You should be able to factor trig expressions.

ex) Is the function defined by $f(x) = \sin x \cos x$ even, odd, or neither

ex) Show that $\sin^2 \phi (\tan^2 \phi + 1)$ simplifies to $\tan^2 \phi$

ex) Factor $\cos^2 t + 3 \cos t - 4$

Section 5.5 – 5.7

You should be able to graph all six trig functions. You should always scale the x-axis in quarter period increments. Be prepared to find the amplitude, period, asymptotes, zeros, and phase-shifts as appropriate.. You should also understand how to reflect these graphs across the x-axis. Remember, I can either ask you to graph a function or I can give you the graph and ask you for a function. Study both types of problems!

ex) Graph one full period of $y = -\frac{3}{2}\sin x$. Identify the amplitude, period and zeros

ex) Graph one full period of $y = \frac{1}{2}\sec 2x$. Identify the period and the equations of the asymptotes

ex) Problem 51 pg 542

ex) Graph one full period of $y = \cos(2x - \frac{\pi}{3})$. Identify the period, the amplitude, the zeros and the phase-shift.

Section 6.1

Memorize all reciprocal, ratio, and Pythagorean identities. Use these known identities to verify lots of other identities. At least one test question will be taken directly from this section!

ex) $\csc x = \frac{\cot x + \tan x}{\sec x}$

Section 6.2

Memorize all sum and difference identities. Use them to...

-Find exact values

-Verify identities

ex) Find the exact value of $\sin(120^\circ - 45^\circ)$

ex) Given $\tan \alpha = -\frac{4}{3}$, α in QII, and $\tan \beta = \frac{15}{8}$, β in Q III, find $\cos(\alpha + \beta)$

ex) Verify the identity: $\tan(\theta + \frac{\pi}{4}) = \frac{\tan \theta + 1}{1 - \tan \theta}$

Section 6.3

Memorize all double and half angle identities. Use them to.....

-Find exact values

-Verify identities

ex) Use the half-angle identities to find the exact value of $\cos 157.5^\circ$

ex) Given $\cos \alpha = \frac{24}{25}$, α in QIII, find a) $\sin 2\alpha$, b) $\cos \frac{\alpha}{2}$

ex) Verify the identity: $\cos^4 x - \sin^4 x = \cos 2x$