Online Trigonometry **Final Exam** **Name:_____**

Directions: You may use your textbook, notes and calculator to complete this test. The time limit for this exam is 2 hours. This test must be completed and returned by Monday, December 12, 2011 along with your completed course project.

(1) Evaluate the following using the Unit Circle:

$$\sin \frac{7\pi}{6} =$$

$$\cos 135° =$$

$$\cot 180° =$$

(2) Use your calculator to evaluate the following:

$$\sin 78° =$$

$$\sec 4.6 =$$

$$\tan 15° =$$

(3) Complete the following Pythagorean Identity: $\sec^2\theta =$ _____

(4) List the Power Reducing Formulas for sine and cosine.

(5) Simplify the following trig expression completely: $\sin x - \sin x \cos^2 x$

(6) Use the difference formula for Sine to simplify the following expression completely:

$$\boldsymbol{sin(x - \frac{\pi}{2})}$$

(7) Find two values of θ between 0 and 360 degrees such that cos $\theta = \frac{1}{2}$.

(8) Find two values of θ between 0 and 360 degrees such that tan $\theta = 5.1258$.

(9) Find the distance across the swamp by solving problem 41 on page 213.

(10) Find the exact value of d for the triangle shown on page 213, problem number 42.

(11) **Prove the following identity:** $\boldsymbol{cos\ x + sin\ x\ tan\ x = sec\ x}$

(12) **Solve the following equation for all solutions in the interval** $[\mathbf{0°}, \mathbf{360°}]$**:**

$$\boldsymbol{2sin^2x - 5\ sin\ x - 3 = 0}$$

(13) **Solve the following equation for all solutions in the interval** $[\mathbf{0°}, \mathbf{360°}]$**:**

$$\boldsymbol{cos^2x + sin\ x = 1}$$

(14)

Given a triangle with angle $A = 20°$, angle $C = 110°$, and side $a = 5$ units, use the Law of Sines to find the length of side b.

(15)

Use the Law of Cosines to find angle A for a triangle with sides $a = 55$, $b = 25$ and c = 72.