Math 112 – section _____ _____ NAME: _____

Test 3, version A, spring 2011 100 Ave quiz % =

Sections 8.7-8.8, 9.1-9.5 and 13.1-13.3 Seat: _____ Ave HW % =

Test 1 & 2 & 3 =

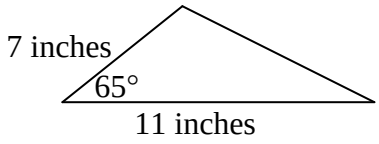
Full credit is based on work shown! **Total =**

10pts **Total / 5** = semester % =

1. Solve for **angle C** in a triangle where b = 4, c = 5, and angle B = 40°.
   [Note: This is not a right triangle.]

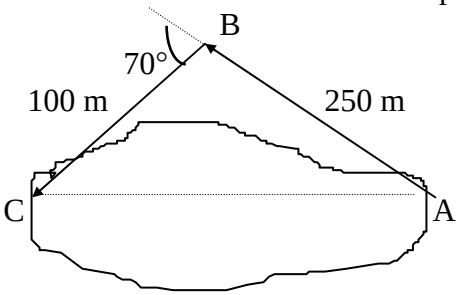
10pts

2. **Find the area of this triangle**. It is not a right triangle.
   Round the answer to two decimal places and include appropriate units with your answer.



10pts

3. To approximate the length of a marsh, a surveyor walks 250 meters from point A to point B, then turns 70° and walks 100 meters to point C. Calculate the approximate the length AC across the marsh.



Full credit is based on work shown! (If you choose to use your calculator for sequences, include appropriate information on what to type to generate sequences and/or sums of sequences.)

16pts

4. Answer the following questions for this sequence: 14, 22, 30, 38, 46, **…**

   a. Is this an arithmetic sequence **or** a geometric sequence? _____

   b. Write a **formula** for the n^{th} term of **this** sequence. c. What is the $25^{\mathbf{th}}$ **term**?

   d. What is the **sum** of the first 25 terms?

16pts

5. a. **Write out the first 5 terms** in this infinite sequence.

$$\sum_{k=1}^{\infty} 8\left(\frac{1}{3}\right)^{k-1} =$$

   b. Is this an arithmetic sequence **or** a geometric sequence? _____

   c. What is the sum of the **first 5 numbers**? d. What is the **sum of the infinite sequence**?

18pts

6. Solve for θ. Give answers as **exact values**, in fractional forms of π, on the interval $0 \le \theta < 2\pi$.

a. $4\cos^2\theta = 3$

b. $2\cos^2\theta = \cos\theta + 1$

10pts

7. A wire 67 feet long is attached to the top of a radio transmission tower, making an angle of 55° with the ground. How high is the tower? _____ **Draw a sketch to illustrate this problem** and solve for the height. Note: The tower is perpendicular to the ground.

10pts

8. The displacement, d, (in feet) of an object at time t (in seconds) is given by $d = 3\sin(4t)$.
[Include units with your answers.]

a. In this simple harmonic motion, what is the maximum displacement from its rest position? _____

b. What is the time required for one oscillation?_____

c. Draw a sketch to illustrate this motion. Label each axis with appropriate units.