Test 4 MAT 1015 Winter 2009 Name _____

This is a take-home test. You may use your notes, the book, etc. This test is due on Tuesday, March 10, 2009 at the beginning of class. Late tests will not be accepted! Remember to simplify all of your answers and show your work for credit!

Change the following to radian measure:

1) 305^o 2) 110^o

Change the following to degree measure:

3) $\frac{7\pi}{12}$ radians 4) 3.9 radians

Find the following, if they exist. Round answers to four decimal places.

5) $\sin 785^o$ 6) $\csc 167^o$ 7) $\sec 309^o$ 8) $\tan 245^o$ 9) $\cot 496^o$

10) Given a circle having a radius of 16 cm, an angle θ intercepts an arc length of 34 cm.
a) Find the angle measure θ in radians. b) Find the angle measure θ in degrees.

11) In a circle with a radius of 8.5 feet, how long is an arc associated with a central angle of $\frac{3\pi}{8}$ radians?

Find the angle measure between 0^o and 360^o that is coterminal with the given angle measure.

12) 767^o 13) -1002^o 14) -64^o 15) 1987^o

Name the two angles between 0^o and 180^o having the following measures. Round answers to the nearest tenth of a degree.

16) $\sin B = 0.4$ 17) $\sin Q = 0.462$ 18) $\sin A = 0.0097$ 19) $\sin T = 0.9956$

20) An airplane leaves an airport in a direction of 224^{o} and flies 300 miles. How far south of the airport is the airplane at that point?

21) Rapunzel is stuck in a castle room that is 90 feet above the ground. When she looks out of the window, she notices that there is a moat filled with water and alligators all around the castle! Since Rapunzel made straight As in her math classes, she knows to pull out her medieval protractor and measure the angle of depression from her room window to the ground on the other side of the moat. When she does so, she gets a measure of 52^{o}. How wide is the moat that she's going to have to clear in order to escape from her castle room?

22) The tallest building in the world is the 1671-foot high Taipei 101 building in Taiwan. What will be the length of the shadow of the tower on a day that the angle of elevation of the sun is 40°?

Given the following angle measures and side lengths, find the requested information.

23) $B = 56^{o}$, $C = 71^{o}$, $b = 5$. Find side c.

24) $A = 27^{o}$, $b = 12$, $a = 7$. Find angle(s) B.