Math 112, Section _____ _____ Name: _____

Test 1, version A, spring 2012 100

Chapter 7 sections 1-5, and chapter 5 sections 5-6 Seat location: _____

Show all necessary work. Full credit is based on work shown! (letter A-G & number 1-5)

12pts

1. Conversions:

   a. Express 225° in radian measure.

   b. Express $\frac{7\pi}{3}$ radians in degrees.

   c. Convert 46° 34′ 12” to decimal form.

   d. Convert 17.255° to degrees, minutes, and seconds.

10pts

2. Give the **exact value** for each of the following trig functions (without using a calculator). **Draw and label the sides of an appropriate right triangle.**

   a. sec 30° =

   b. cot 45° =

12 pts

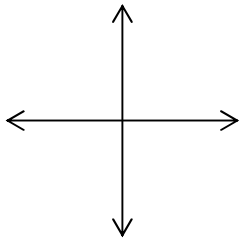
3. Give **exact value** for each **trig function**, without using a calculator. Draw and label a sketch to illustrate each one. (Your sketch should illustrate the angle and its reference angle.)

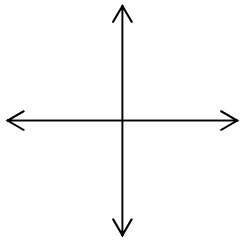
   a. tan 135º =_____

   reference ∠ = _____

   b. $\sin\left(\frac{7\pi}{6}\right)$ =_____

   reference ∠ = _____





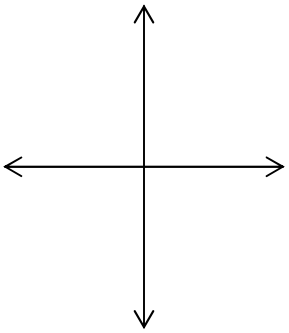
5pts

4. The sine function is negative in what quadrants? _____
   Explain:

12pts

5. a. If $\tan\theta = -\frac{7}{2}$ and $\sin\theta > 0$, angle θ is in what quadrant? _____

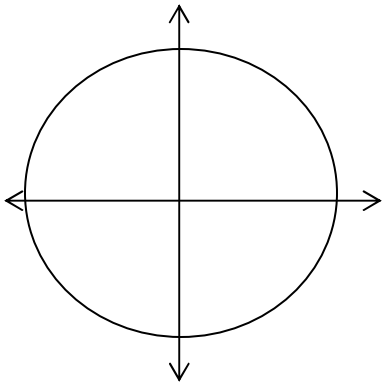
   b. **Draw a sketch** to illustrate angle θ and its reference angle (and triangle), then find the **exact value of the remaining five trigonometric functions of θ**. (Do not use a calculator.)



12pts

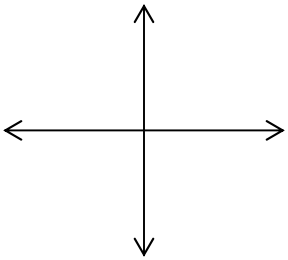
6. Sketch each angle and label the coordinates for each appropriate point on this unit circle.

   a. 270° b. 240° c. $\left(\frac{5\pi}{6}\right)$ radians



9pts

7. Sketch the angle and then find the exact value for each :



a. $\cot\left(\frac{10\pi}{3}\right) =$ _____

b. $\csc\left(\frac{10\pi}{3}\right) =$ _____

4pts

8. Find the exact value of this expression using the Fundamental Identities and/or the Complementary Angle Theorem. Show your steps to indicate which identities you used. Do NOT use a calculator.

$\cot 25° \cdot \csc 65° \cdot \sin 25° =$

7pts

9. **Draw a sketch and use trig to solve this problem:** (Show your work.)
A radio transmission tower is 200 feet high. **How long** should a guy wire be if it is to be attached to the tower 15 feet from the top and is to make an angle of 75° with the ground?

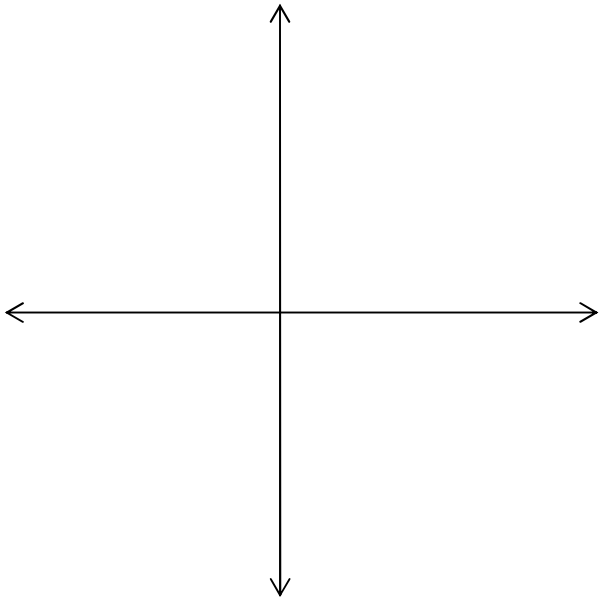
17pts

10. $f(x) = 2x^4 + 5x^3 - 14x^2 - 5x + 12$

a. What is the maximum number of zeros of f(x)? _____

b. List all possible rational zeros for f(x): _____

c. Sketch a graph of f(x)



d. What are the real zeros of f(x)?

e. Write f(x) in completely factored form.