1. Determine the exact value of each of the following trigonometric ratios. (Hint: Use a sketch to determine in which quadrant the terminal arm of the principal angle lies, the value of the related acute angle, and the sign of the ratio)

Fill in angles (radians) and side lengths for special Δ’s:

Fill in ‘CAST’:

a) cos  b) sin  c) tan 

d) sec  e) csc 

2. For each of the following, determine the values of  in radians if . (Hint: Use a sketch to determine in which quadrant the angles lie)

a)  b) 

c) 

3. Determine the exact value of each of the following trigonometric ratios. Check your answers using the unit circle.

a) cos  b) sin  c) csc 

d) sec 

4. tan is undefined. Use the unit circle to explain why.