**Homework 3**

**Part 1: Unit Circle & All Six Trig Functions**

1. Complete a blank unit circle diagram with degrees, radians, and coordinates for all special angles (pi/6, pi/4, pi/6). *Self-check this carefully!* **(If you already think you know how to do this easily, just do the fourth quadrant)**
2. Find the exact value for all six trigonometric functions (sin,cos,tan,csc,sec,cot) for each of the following angles:
   * a) 135∘
   * b) 5π/3
   * c) −30∘ (Find a positive coterminal angle first)
   * d) 3π/2 (Be careful with undefined values)
3. If tanθ=−3​ and sinθ>0, find the value of θ (in degrees and radians, 0≤θ<2π or 0∘≤θ<360∘) and then find the values of cosθ and cscθ.
4. In which quadrant(s) does θ lie if:
   * a) secθ<0 and tanθ>0?
   * b) cscθ>0 and cotθ<0?

**Part 2: Trigonometric Identities** 5. Given sinθ=−2/3 and θ is in Quadrant III. Use Pythagorean identities to find:

a) cosθ

b) tanθ

c) secθ

6. Simplify the following expressions: (If you get stuck, don’t worry; we’ll review these next time)

a) cos^2(x)tan^2(x)+cos^2(x)

b) (secθ−tanθ)(secθ+tanθ)

7. Verify the identity: cotxsecx=cscx