Math 121   Take-Home Quiz #5

Due Sunday, May 16, 2021 in Gradescope by 11:59 pm ET

Instructions:

• This is an Open Notes Quiz. You can use materials, homeworks problems, lecture notes, etc. that you manually worked on.

• This is **NOT** an Open Internet Quiz. You can only access our Main Course Webpage.

• You are not allowed to work on or discuss these problems with other students or people.

• You can ask a few small, clarifying, questions in Office Hours, but the problems will not be solved for you.

• The main goal is to make a thoughtful and detailed presentation for the solutions. Submit a clear final draft. No mess please.

• Please submit your final work in Gradescope in the Quiz 5 entry. No Calculators or computers.

1. [10 Points] Carefully Sketch the polar curve $r = 2 + 2\sin\theta$. Show all work. Show the Cartesian plot(s) and also the final Polar plot. Label all sketches.

2. [10 Points] Carefully Sketch the polar curve $r = 2 - 2\cos\theta$. Show all work. Show the Cartesian plot(s) and also the final Polar plot. Label all sketches.

3. [10 Points] Consider the Area bounded **outside** the polar curve $r = 2 + 2\sin\theta$ and **inside** the polar curve $r = 6\sin\theta$.

(a) Quickly sketch the Polar curve(s) and shade the described bounded region. (You don't need the Cartesian plots this time) Label the Sketch.

(b) Solve for the angles θ where these two polar curves intersect. Label the sketch.

4. [10 Points] Consider the Area bounded **outside** the polar curve $r = 3$ and **inside** the polar curve $r = 2 + 2\cos\theta$.

(a) Quickly sketch the Polar curve(s) and shade the described bounded region. (You don't need the Cartesian Plots this time) Label the Sketch.

(b) Solve for the angles θ where these two polar curves intersect. Label the sketch.