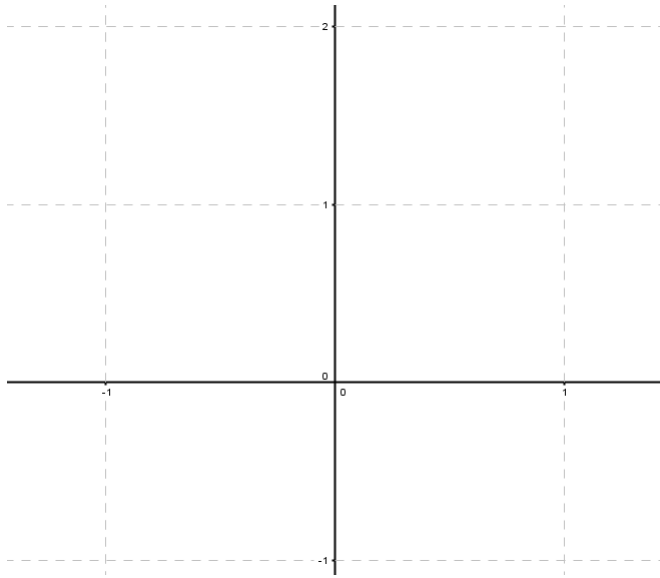


Show all work for full credit.

1. Sketch the polar curve: $r = 1 + \sin(\theta)$



2. Set up the integral for the length of the curve $r = 1 + \sin(\theta)$

Identities:

$$\cos^2(\theta) = \frac{1}{2}(1 + \cos(2\theta))$$

$$\sin^2(\theta) = \frac{1}{2}(1 - \cos(2\theta))$$

3. Set up the integral of the region bounded by $r = 1 + \sin(\theta)$

4. Find the value of the area bounded by the region $r = 1 + \sin(\theta)$.