

Math 53 (Multivariable Calculus), Section 102 & 108

Week 3, Wednesday

Sep 7, 2022

For the other materials: seewoo5.github.io/teaching/2022Fall

1. Consider two curves $r = 2 \cos \theta$ and $r = 2 \sin \theta$.
 - (a) Find the area of the region that lies inside both curves.
 - (b) Find the perimeter of the above region.
2. (a) Sketch a graph of a curve with polar equation $r^2 = \sin 2\theta$.
 - (b) Find the area enclosed by the curve.
 - (c*) Show that the length of the curve equals to

$$2 \int_0^{\pi/2} \frac{d\theta}{\sqrt{\sin 2\theta}}$$