Math 53 (Multivariable Calculus), Section 102 & 108
Week 3, Wednesday
Sep 7, 2022
For the other materials: seewoo5.github.io/teaching/2022Fall

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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

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