1. (a) Find the area of one leaf of the polar rose $r = \cos(4\theta)$

   (b) What is the total area enclosed by all leaves of $r = \cos(4\theta)$?

   (c) What proportion of the area of the unit circle does the polar rose enclose?

2. A lamina occupies the region R that is bounded by the circle of radius 2 centered at the origin, and the density of the lamina at a point is inversely proportional to the distance from the origin.

   Find the total mass of the lamina.