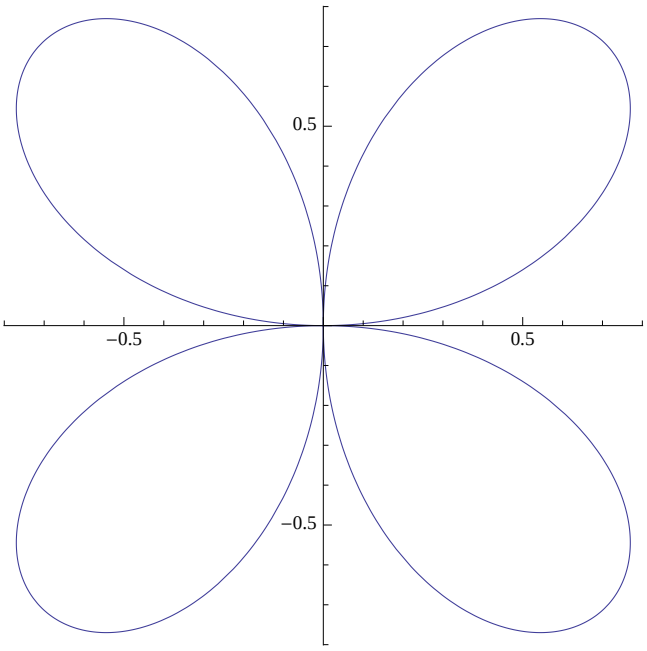
Practice problems from class: polar curves, polar areas, intersections of polar curves

(Section 10.3, #54): (a) Sketch $r = \cos(\theta/3)$.
(b) [additional, not covered in class] Sketch $r = 1 + 2\cos\theta$. Does this look similar to part (a)?

(Section 10.4, # 8) Find the area of one leaf of the plot of $r = \sin 2\theta$ below.



31) Find the area of the region that lies inside both curves $r = \sin 2\theta$, $r = \cos 2\theta$. [Note that one curve is a rotation of the other. In general, think about how the polar curves $r = f(\theta)$ and $r = f(\theta - \alpha)$ are related for a fixed angle α.]

41) Find all points of intersection of the curves $r = \sin\theta$, $r = \sin 2\theta$.