Name:                              Serial:                    ID:

**Q1.** Identify the curve by finding a Cartesian equation for

(a) $r^2 \cos 2\theta = 1$                                          (b) $r = \sec \theta$

**Q2.** Find the area of the region that lies inside $r = 3 \sin \theta$ and outside $r = 2 - \sin \theta$.

**Q3** Find the length of the cardioid $r = 2 + 2\sin\theta$