**NAME:** (print!) _____

**E-MAIL ADDRESS:** (print!) _____

**1.** (10 points) Find the general expression, in polar coordinates, for the steady-state temperature $u(r, \theta)$ in the **infinite** plane with a circular hole of radius 2 cut-out, and where the temperature at the bounding ring is $u(2, \theta) = 2 \sin 3\theta, 0 < \theta < 2\pi$.