Quiz 3   MAC-2312   Spring 2019   **Name:** _____

To receive credit you MUST SHOW ALL YOUR WORK.

1. (3 pts) Replace the polar equation $r\cos\theta + r\sin\theta = 1$ with an equivalent Cartesian equation. Then describe or identify the graph.

2. (a) (4 pts) Sketch the cardioid $r = 1 - \sin\theta$ in the Cartesian xy-plane. Be sure to indicate the axis of symmetry and give the polar coordinates of at least 5 points.

(b) (4 pts) Set up an integral (or sum/difference of integrals) that represents the area of the region inside the circle $r = 1/2$, but outside the cardioid $r = 1 - \sin\theta$. You DO NOT have to spend time evaluating the integral. It is not required for this quiz.