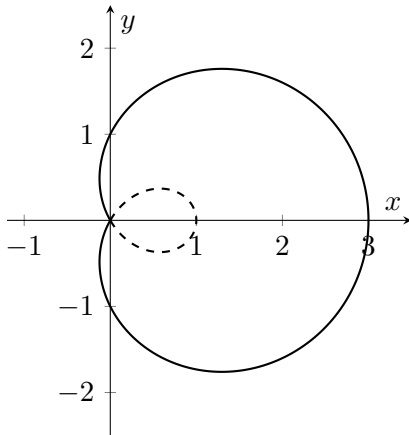**5.** [11 points] The parts of this question relate to the following polar graph, defined by the polar curve $r(\theta) = -1 + 2\cos(\theta)$, on the domain $[0, 2\pi]$. Both the solid and dashed curves are part of the graph of $r(\theta)$.

a. [2 points] What are all the angles θ, with $0 \le \theta \le 2\pi$, for which the graph passes through the origin?

Answer(s): _____

b. [2 points] Determine the interval(s) within $[0, 2\pi]$ for which θ traces out the **dashed** portion of the graph.

Answer(s): _____

c. [3 points] Write, but do not evaluate, an expression involving one or more integrals which gives the **area** enclosed by the **dashed** portion of the graph.

The area is _____

5. (continued) For your convenience, the polar graph referenced by this problem is reproduced here:
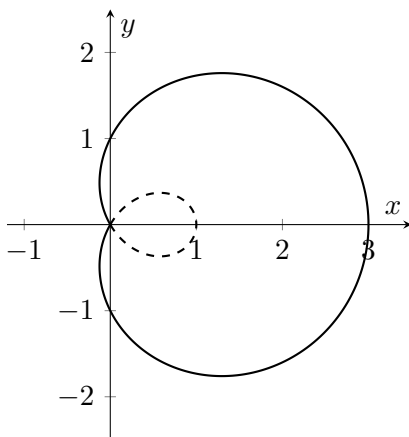
d. [4 points] Write, but do not evaluate, an expression involving one or more integrals which gives the **arc length** of the **solid** portion of the graph.

The arc length is _____