2. [15 points] With a crashing stork market, the infinite trumpet glitch, and the forestry expansion over-expanding, the video game *Vegetable Crossing* has a lot of issues. Maria designs a new island for the game, and on the island there is an area where players can grow acacia plants.

- The island is in the shape of the polar curve $r = 200 - 100\cos(\theta)$ where $0 \le \theta < 2\pi$. The outline of the island is the **solid black curve** plotted below.

- **The acacia-growing zone is shaded blue**, and it is formed by the section of the island inside a circle of radius 150 meters centered at the origin. The circle is the dashed green curve plotted below.

- All distances on the graph are in meters.
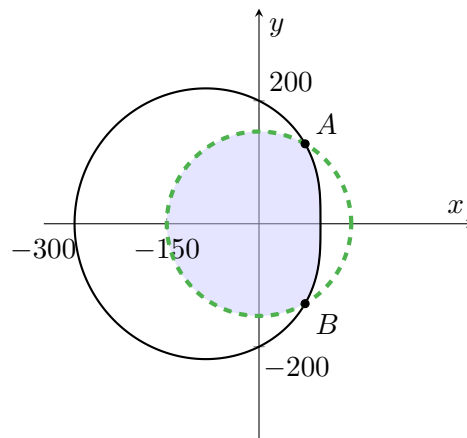
a. [5 points] The points A and B, labeled above, are the intersection points of the polar curve $r = 200 - 100\cos(\theta)$ with the dashed green circle. Find points A and B **in polar coordinates**.

b. [5 points] Find an expression involving one or more integrals for the length, in meters, of the perimeter of the acacia-growing zone. Do not evaluate your integral(s).

c. [5 points] Players are able to pave any part of the island **outside** of the acacia-growing zone, at a cost of 7 dubloons per square meter. Find an expression involving one or more integrals for the cost, in dubloons, of paving the entire area which lies outside of the acacia-growing zone. Do not evaluate your integral(s).