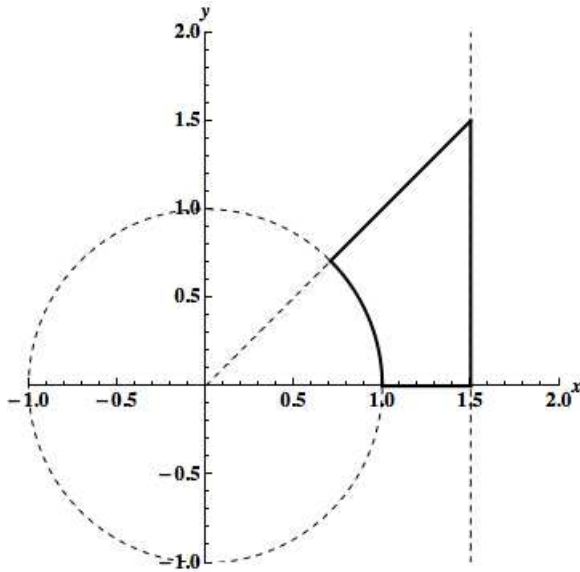
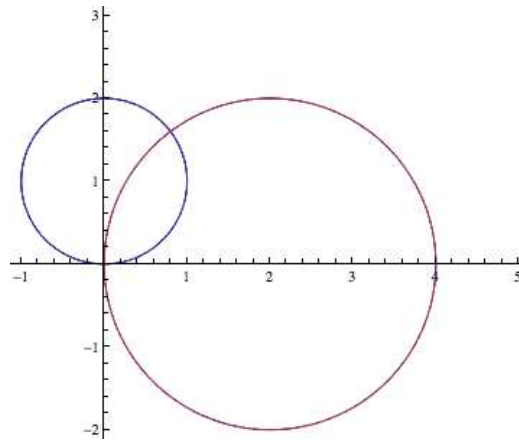


5. [12 points] Solve each of the following problems.

- a. [4 points] Give inequalities for r and θ that describe the region shown below in polar coordinates. The region is bounded by the circle $x^2 + y^2 = 1$, the line $y = x$, the x -axis and the vertical line $x = 1.5$.



- b. [8 points] The functions in polar coordinates $r = 2 \sin \theta$ and $r = 4 \cos \theta$ represent the circles shown below



Let A be the area of the intersection of these circles. Find an expression involving definite integrals in polar coordinates that computes the value of A . You do not need to evaluate the integrals.