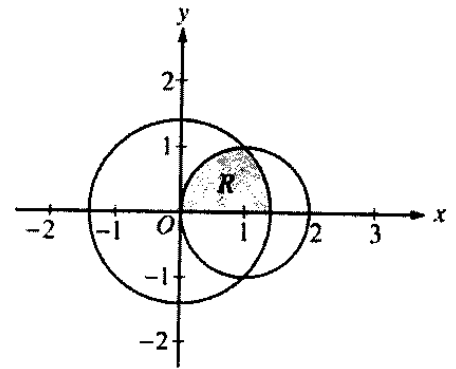


AP[®] CALCULUS BC
2003 SCORING GUIDELINES (Form B)

Question 2

The figure above shows the graphs of the circles $x^2 + y^2 = 2$ and $(x - 1)^2 + y^2 = 1$. The graphs intersect at the points $(1, 1)$ and $(1, -1)$. Let R be the shaded region in the first quadrant bounded by the two circles and the x -axis.



- (a) Set up an expression involving one or more integrals with respect to x that represents the area of R .
- (b) Set up an expression involving one or more integrals with respect to y that represents the area of R .
- (c) The polar equations of the circles are $r = \sqrt{2}$ and $r = 2 \cos \theta$, respectively. Set up an expression involving one or more integrals with respect to the polar angle θ that represents the area of R .