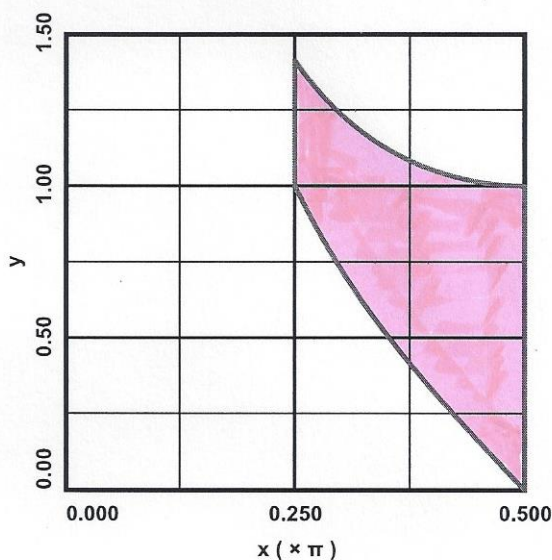


# AP CALCULUS AB

- 1) Calculate the volume of the solid whose cross-sections, perpendicular to the  $x$  – axis are squares, where the diagonals of the squares run from the  $x$  –axis to the curve  $y = -x^2 + 4x$  on  $x \in [0, 4]$ .
- 2) For the area in the first quadrant bounded by the curves  $y = -x^2 + 4$ ,  $x = 0$  and  $y = 0$ , calculate the volume of the solid generated by revolving this area about the  $y$  – axis. Use a cylindrical disk as the differential of volume.
- 3) For the area bounded by the curves  $y = \cot x$ ,  $x = \pi/4$ ,  $y = \csc x$  and  $x = \pi/2$  as pictured, calculate the volume of the solid generated by revolving this area about the  $x$  – axis. Use an annular disk as the differential of volume.  
*Hint: use the identity  $1 + \cot^2 x = \csc^2 x$  to evaluate the integral.*



# QUIZ #14 STUDY GUIDE

- 4) For the area bounded by the  $x$  – axis and  $y = 4 - (x - 5)^2$  on  $x \in [3, 7]$  as pictured, calculate the volume of the solid generated by revolving this area about the  $x$  – axis, using
  - a) a cylindrical shell as the differential of volume, and
  - b) a cylindrical disk as the differential of volume.

