Problem Set 44: Finding Volume using Cross Sections

You are permitted to use a calculator to solve the integrals for these problems.

1. Find the volume of the solid formed by the region bounded by the x-axis, the y-axis, $y = 4$, and $x = 3$ whose cross sections perpendicular to the x-axis are…

   a) Rectangles with a height of 5

   b) Semicircles

2. Find the volume of the solid formed by the region bounded by the x-axis, the y-axis, $y = \cos(2x)$, and $x = \frac{\pi}{4}$ whose cross sections perpendicular to the x-axis are…

   a) Squares

   b) Semicircles

3. Find the volume of the solid formed by the region bounded by the x-axis and $y = x^2 + 3x - 4$ whose cross sections perpendicular to the x-axis are…

   a) Equilateral Triangles

   b) Rectangles whose height is x

4. Find the volume of the solid formed by the region bounded by $x = 4y, x = -y + 4$, and the x-axis whose cross sections perpendicular to the **y-axis** are…

   a) Squares

   b) Equilateral Triangles