Finding Volumes by Slicing and Volumes of Revolution

1. Find the volume, in cubic feet, of the Great Pyramid of Egypt, whose base is a square 755 feet by 755 feet and whose height is 410 feet.

   Group 1. Find the volume of one slice.

   Group 2. Write a definite integral that represents the volume of the pyramid.

   Group 3. Solve the integral to find the volume.

2. Find the region bounded by the curve $y = e^{-x}$ and the x-axis between $x = 0$ and $x = 1$ is revolved around the x-axis. Find the volume of this solid of revolution.

Group 1. Sketch a graph of the solid and write the volume of one slice.

Group 2. Set up a definite integral to represent the volume of the solid.

Group 3. Solve the integral to find the volume.

3. The region bounded by the curves $y = x$ and $y = x^2$ is rotated about the line $y = 3$. Compute the volume of the resulting solid.

Group 1. Sketch a graph of the solid and write the volume of one slice.

Group 2. Set up a definite integral to represent the volume of the solid.

Group 3. Solve the integral to find the volume.