

Homework 15

1.

A solid has slices perpendicular to the y axis that are squares with one edge on the xy plane. The intersection of the solid with the xy plane is the region between the curves $x = \frac{y^3}{3} + 9$ and $x = y^2 + 9$.

Find the volume of the solid.

Answer: $\frac{81}{35}$

2.

A solid has slices perpendicular to the x axis that are equilateral triangles with one edge on the xy plane. The intersection of the solid with the xy plane is the region between the curves $y = x^3 - 5$ and $y = 2x^2 - 5$.

Find the volume of the solid.

Answer: $\frac{32}{35\sqrt{3}}$

3.

A solid has slices perpendicular to the x axis that are circles with center on the xy plane. The intersection of the solid with the xy plane is the region between the curves $y = \frac{x^3}{2} + 6$ and $y = 6 - \frac{x^2}{2}$.

Find the volume of the solid.

Answer: $\frac{\pi}{1680}$