Class 14: Areas and Volumes
Calculus II
College of the Atlantic. Feb 9, 2023

1. Find the area of a triangle with a base of 10 and a height of 5.

2. Find the volume of a cone with a base of 10 and a height of 5.

3. Find the area of a semicircle with a radius of 7.

4. Find the volume of a hemisphere with a radius of 7.

5. Find the volume of the solid obtained by rotating the region bounded by $y = x^2$ and $x = 2$ around the x-axis.

6. Find the volume of the solid obtained by rotating the region bounded by $y = x^2$, $x = 2$, and $y = 0$ around the y-axis.

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

8. A hemispherical bowl of radius 12 inches is filed to a depth of 3 inches. Find the volume of water in the bowl.

9. A hemispherical bowl of radius r is filled to a depth of h. Find a formula for the formula of the volume of the water. Check your formula by examining what happens when $h \to r$.