408L CLASS PROBLEMS

FEBRUARY 7TH, 2020

Problem 1. Find the volume of the solid by rotating the area under the graph of $\sin(x)$ on $0 \leqslant x \leqslant \pi$ around the x-axis.

Problem 2. Find the volume of the solid obtained by rotating around the x-axis the area under the graph of $f(x) = \frac{x+2}{\sqrt{x^2+1}}$ for $0 \leqslant x \leqslant t$.

Problem 3. Find the volume of a sphere of radius 1. (Hint: regard a sphere as a surface of revolution.)

Problem 4. Find the volume obtained by rotating about the y-axis the area in the first quadrant lying between the graph of $f(x) = x + 1$, the graph of $g(x) = \sqrt{x}$, and the line $y = 5$.