

ASSIGNMENT 5

7.8.68 Evaluate $\int_2^\infty \frac{1}{x\sqrt{x^2-4}} dx$.

7.8.75 Show that the region $R = \{(x, y) \mid x \geq 1, 0 \leq y \leq \frac{1}{x}\}$ has infinite area but it attains a finite volume by rotating R by the x -axis (Gabriel's horn).

TEXTBOOK 7.8

7.8.91 Find the value of the constant C such that the integral

$$\int_0^\infty \left(\frac{1}{\sqrt{x^2+4}} - \frac{C}{x+2} \right) dx$$

converges. Evaluate the integral for this value of C .

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Evaluate $\int_1^\infty \frac{\tan^{-1} x}{x^2} dx$ and $\int_{-1}^1 \frac{\tan^{-1} x}{x^2} dx$, respectively