

Calculus II (Math 232) Quiz

October 29, 2014

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Justify answers and show all work for full credit.

NAME: _____

1. Use the shell method to calculate the volume of the infinite solid obtained by rotating about the y -axis the region under $y = \frac{1}{(x^2 + 25)^2}$ for $0 \leq x < \infty$.
2. Calculate the volume of the infinite solid obtained by rotating about the x -axis the region under $y = \frac{1}{\sqrt{x^2 + 9}}$ for $0 \leq x < \infty$.

3. Use the Comparison Test to determine whether the following integral converges or diverges:

$$\int_0^{\infty} \frac{1}{\sqrt{x^2 + 9}} dx$$

4. Let $f(x) = \sqrt{2x + 1}$. Compute the Taylor polynomial $T_3(x)$ centered at $a = 1$ for $f(x)$.