Quiz: The Third

04 Feb 2015

This test totals 20 points. Good luck!

1. (5 pts) Evaluate the following improper integral. SHOW WORK and use the language of limits to justify your answer.

\[ \int_{1}^{\infty} \frac{1}{x^5} \, dx \]

Answer: ________________________________
2. (10 pts) Integrate using partial fractions. SHOW WORK!

\[
\int \left( \frac{6}{x^2 - 9} \right) \, dx
\]

Answer: 


3. (5 pts) Find an approximate value of the following integral using the Midpoint rule and 2 rectangles. Show neat work and remember to draw a neat figure and shade the rectangles.

\[ \int_{0}^{4} (2x + 4) \, dx \]

Answer: ______________________________
4. (2 pts) [EXTRA CREDIT] Find an approximation for the same integral \( \int_0^4 (2x + 4) \, dx \) using the midpoint rule, but with 100 rectangles. Will your approximation get strictly better if you increase the number of rectangles? Justify.