Name

• You have 15 minutes  
• No calculators  
• Show sufficient work

1. (3 points) Evaluate and simplify the following definite integral.

\[ \int_{\pi/2}^{\pi} \frac{\sin 2x}{\cos x} \, dx \]

2. (3 points) Evaluate the following indefinite integral.

\[ \int 1 + \frac{2}{5x} \, dx \]
3. (2 points) Fill in the missing information to show that the given definite integral can be expressed as the limit of a Riemann sum. The only variables appearing in your limit should be $n$ and $k$. You do not need to evaluate this limit.

$$\int_2^6 \ln(x^2) \, dx = \lim_{n \to \infty} \sum_{k=1}^{n} \left[ \right]$$

4. (2 points) Evaluate the following limit. Be sure to use proper notation throughout your evaluation of this limit.

$$\lim_{n \to \infty} \sum_{k=1}^{n} \left( \frac{4}{n} + \frac{k}{n^2} + \frac{3k^2}{n^3} \right)$$