

# Math152 - Calculus II - Winter 2005

## Mid-Term TEST #2, February 17, 2005

In the following problems you are required to show all your work and provide the necessary explanations everywhere to get the full credit.

1. Find the following integrals:

$$(a) \int \frac{x^2}{\sqrt{4-x^2}} dx$$

$$(b) \int \frac{2x-1}{x^2-2x+1} dx$$

$$(c) \int_0^{\pi/6} \frac{2 \cos x}{\sqrt{1-2 \sin x}} dx$$

2. Determine whether the sequence  $\{\ln(3n^2 - 1) - \ln(n^2 + n + 1)\}_{n=10}^{+\infty}$  converges.

3. Determine whether the series  $\sum_{n=2}^{\infty} \left(\frac{8n-2}{4n+3}\right)^n$  converges.

4. Determine whether the series  $\sum_{n=2}^{\infty} (-1)^{n+2} \frac{1}{\sqrt{n+2}}$  converges. Determine whether this series converges absolutely.