Cunte
section 232

MATH 232 FINAL SPRING SESSION 2010

1. (15 pts) Use the vectors **v**=(1,0,-2), **u**=(3,1,1) and **w**=(0,-3,4) to answer each of the following
a) What is the angle between **v** and **u**?
b) Compute **wXu**
c) Use your answer in part b) to calculate the volume of the parallepiped spanned by **v**, **w** and **u**.

2.(15 pts) Calculate the volume of the solid generated by rotating around the y-axis the region bounded by the graphs of $f(x) = \ln(x)$,the vertical line $x = 4$ and the x-axis.

3. (15 pts) The Mclaurin series for $\ln x$ centered at 1 is given by

$$\sum_{1}^{\infty} (-1)^{n-1} \frac{(x-1)^n}{n}$$

a) Find the interval of convergence
b) For each endpoint, determine if the series converges or diverges.

4. (10 pts) Evaluate the improper integral

$$\int_2^{\infty} \frac{dx}{(x-1)^3}$$

5. (15 pts) Determine whether each series converges or diverges. State which test was used.

$$a) \sum_{n=1}^{\infty} \frac{2n}{5n^2-3} \quad b) \sum_{n=1}^{\infty} \frac{5^n}{n!} \quad c) \sum_{n=1}^{\infty} \left(3+\frac{1}{n}\right)^n$$

6. (15 pts) Compute the indefinite integral

$$\int \frac{dx}{x^2\sqrt{x^2+1}}$$

7. (15 pts) What is the volume of the solid generated by rotating the region bounded by the graphs of $y = \sqrt{x}$ and $y = \frac{1}{3}x$ around the x-axis?