

MATH 152

Mrs. Bonny Tighe

EXAM II

8.3 – 12.3

100 points

NAME _____

SECTION _____ Wed. 10/26/05

1. Evaluate: $\int e^{-x} \cos x \, dx$

2. Evaluate: $\int \frac{\sqrt{9-x^2}}{x} dx$

3. a) Determine the values of x for which the series is convergent. $\sum_{n=1}^{\infty} (x-3)^n$

b) Define each of the following:

i) a monotonic sequence _____

ii) A convergent sequence _____

iii) a Geometric series _____

4. Evaluate: $\int \sin^3 2x \cos^3 2x \, dx$

5. Evaluate: $\int \frac{e^{2x} + 1}{e^{2x} - e^x - 6} dx$

6. Determine whether each integral is divergent or convergent and evaluate those that are convergent.

a) $\int_1^{\infty} \frac{\ln x}{x} dx$

b) $\int_{-1}^3 \frac{2}{(x+1)^2} dx$

7. Determine whether the sequence is convergent or divergent. If it converges, find the limit.

a) $\left\{ \frac{1}{3}, \frac{1}{2}, \frac{3}{5}, \frac{2}{3}, \frac{5}{7}, \dots \right\}$

b) $a_n = \ln(n-1) - \ln(n+1)$

8. Find the sum for each of the following convergent series.

b) $\sum_{n=1}^{\infty} \frac{3}{5^n}$

c) $\sum_{n=1}^{\infty} \frac{1}{n^2 + 3n + 2}$

9. Use the Integral Test to determine whether the series is convergent or divergent.

a) $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$

b) $\sum_{n=1}^{\infty} n e^{-n}$

10. Find the length of the arc of the curve $y = \frac{x^2}{2} - \frac{\ln x}{4}$ on the interval $2 \leq x \leq 4$

11. Use Simpson's Rule to approximate the area under the curve $f(x) = xe^x$ from $x = 0$ to $x = 4$ with $n = 8$.