

MATH 152
Mrs. Bonny Tighe

EXAM IIA
8.3 – 12.3
100 points

NAME _____

SECTION _____ Wed. 10/26/05

1. Evaluate: $\int \sin x(e^x) dx$

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

3. Evaluate: $\int \frac{\sqrt{x^2 + 4}}{x^2} dx$

4. a) Determine the values of x for which the series is convergent. $\sum_{n=1}^{\infty} \frac{x^n}{4^n}$

b) Define each of the following:

i) a divergent sequence _____

ii) a monotonic series _____

iii) a geometric series _____

5. Evaluate: $\int \tan^3 2x \sec^2 2x \, dx$

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

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

b) $\int_1^{\infty} \frac{\ln x}{x^2} dx$

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

a) $\{2, \frac{3}{4}, \frac{4}{9}, \frac{5}{16}, \frac{6}{25}, \dots\}$

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

9. Find the sum for each of the following series: a) $\sum_{n=1}^{\infty} 4^{-n}$

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

10. Find the surface area when the curve $x = 1 + 2y^2$ on the interval $1 \leq y \leq 2$ is rotated about the x-axis.

11. a) $\sum_{n=1}^{\infty} (e+1)^n$

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

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