

Math 142, Fall 2000, Exam 3

PRINT Your Name: _____

There are 10 problems on 5 pages. Each problem is worth 10 points. each. SHOW your work. *CIRCLE* your answer. **NO CALCULATORS!** CHECK your answer whenever possible.

1. Find $\int x\sqrt{1-x} \, dx$.

2. Find $\int x\sqrt{1-x^2} \, dx$.

3. Find $\int \sqrt{1-x^2} \, dx$.

4. Find $\int xe^x \, dx$.

5. Find $\int xe^{x^2} \, dx$.

6. Find $\int_{-3}^1 \frac{1}{x^2} \, dx$.

7. Find $\lim_{x \rightarrow \infty} \frac{e^{-x}}{x^{-1}}$.

8. Find $\int \frac{2x^3 + 5x^2 + x + 3}{x^2(x^2 + 1)} \, dx$.

9. Find the third Taylor polynomial $P_3(x)$ for $f(x) = \ln(x+1)$ about $a = 0$.

10. Take $P_3(x)$ and $f(x)$ from problem 9. Find an upper bound for the error that is introduced if $f(x)$ is approximated by $P_3(x)$ for $|x| \leq \frac{1}{100}$.