Math 142, Fall 2000, Exam 2

PRINT Your Name:_____ Section:_____

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

1. Find $\int \sin^7 x\, dx$.

2. Find $\int \sin^4 x\, dx$.

3. Find $\int \sin 4x \, \sin 5x\, dx$.

4. Find $\int \csc^3 x\, dx$.

5. Find $\int \cot^3 x\, dx$.

6. Find $\int x \arctan x\, dx$.

7. Find $\displaystyle\int \frac{1}{x^2+4x+5}\, dx$.

8. Find $\displaystyle\int \frac{\sqrt{x^2-4}}{x}\, dx$.

9. Let $f(x) = \frac{2x+1}{3x-1}$ for $x \neq 1/3$. Find $f^{-1}(x)$.

10. Let $f(x) = x^2 \ln x$. Where is $f(x)$ increasing, decreasing, concave up, and concave down? Find the local maxima, local minima, and points of inflection of $y = f(x)$. Graph $y = f(x)$.