Quiz 2 **Calculus 2** **9/5/2007**

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Evaluate $\int \frac{(\ln x)^2}{x}\,dx$.

$u = \ln x \quad du = \frac{1}{x}\,dx \quad dx = x\,du$

$= \int \frac{u^2}{x} x\,du$

$= \int u^2\,du$

$= \frac{u^3}{3} + C$

$= \frac{(\ln x)^3}{3} + C$

Excellent

2. Evaluate $\int \frac{1+x}{1+x^2}\,dx$

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

$u = 1+x^2 \quad du = 2x\,dx \quad dx = \frac{du}{2x}$

$\int \frac{x}{u} \cdot \frac{du}{2x}$

$\frac{1}{2}\int \frac{1}{u}\,du$

$\tan^{-1}x + \frac{1}{2}\ln|u| + C$

always positive so no abs. val.

$\tan^{-1}x + \frac{1}{2}\ln(1+x^2) + C$

Nice Job!