Quiz Questions 2 for Mathematics 224
Introductory Analysis II - Spring 2001
Material Covered: Sections 5.6, 5.7 of workbook and text
For: Friday, 9th February

This is a 15 minute quiz, worth 5% and marked out of 5 points.

Name (please print): _____ . **ID Number:** _____.
last first

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1. [2 points] Evaluate $\int x^2 \ln 4x \, dx$ using integration by parts.

2. [2 points] Evaluate $\int xe^{4x} \, dx$ using integration by parts.

3. [1 point] Evaluate $\int \frac{4x}{6x+5} \, dx$ using the tables.

1. (**1.**) $\frac{1}{3}x^3 \ln 4x - \frac{1}{9}x^3 + C$
   $u = \ln 4x,\ v = \frac{1}{3}x^3,$
   $du = \frac{1}{x}\,dx,\ dv = x^2\,dx,$
   $uv - \int v\,du = \ln 4x \left(\frac{1}{3}x^3\right) - \int \left(\frac{1}{3}x^3\right)\left(\frac{1}{x}\right)\,dx$

2. (**2.**) $\frac{1}{4}xe^{4x} - \frac{1}{16}e^{4x} + C$
   $u = x,\ dv = e^{4x}\,dx,$
   $du = 1\,dx,\ v = \frac{1}{4}e^{4x}$
   $uv - \int v\,du = x\left(\frac{1}{4}e^{4x}\right) - \int \left(\frac{1}{4}e^{4x}\right)\,dx$

3. (**3.**) $\frac{20}{36} + \frac{4x}{6} - \frac{20}{36}\ln(6x+5) + C$
   $\int \frac{x}{ax+b}\,dx = \frac{b}{a^2} + \frac{x}{a} - \frac{b}{a^2}\ln(ax+b) + C$
   $\int \frac{x}{ax+b}\,dx = 4\frac{5}{6^2} + 4\frac{x}{6} - 4\frac{5}{6^2}\ln(6x+5) + C$