Quiz 2 **Calculus 1** **9/6/2005**

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

1. Evaluate $\int \frac{3}{(5y+1)^6}\,dy$.

$u = 5y+1$

$\frac{du}{dy} = 5$

$dy = \frac{du}{5}$

$\int \frac{3}{u^6} \cdot \frac{du}{5} = \frac{3}{5}\int u^{-6}\,du$

$= \frac{3}{5} \cdot -\frac{1}{5}u^{-5}$

$= -\frac{3}{5}\left(\frac{1}{5(5y+1)^5}\right) + C$

Good

2. Evaluate $\int_0^{\pi} \sec^2(t/4)\,dt$.

$u = \frac{1}{4}t$

$\frac{du}{dt} = \frac{1}{4}$

$du \cdot 4 = dt$

$4\int_0^{\pi} \sec^2(u)\,du$

$4\tan\left(\frac{1}{4}t\right)\Big|_0^{\pi}$

$4\tan\left(\frac{1}{4}\pi\right) - 4\tan\left(\frac{1}{4}\cdot 0\right)$

$4 - 0$

4

Wonderful!