Quiz 9

1 $\int \sin^3 x \cos^2 x \, dx = \int (1-\cos^2 x)\cos^2 x \sin x \, dx$

$u = \cos x \;/\; du = -\sin x \, dx$

$= -\int (1-u^2) u^2 \, du = \int u^4 - u^2 \, du =$

$u^5/5 - u^3/3 + C = \frac{\cos^5 x}{5} - \frac{\cos^3 x}{3} + C$

2 $\int \sec^4 x \tan^3 x \, dx =$

$\int \sec^3 x (\sec^2 x - 1) \sec x \tan x \, dx$

$u = \sec x \quad du = \sec x \tan x \, dx$

$\int u^3 (u^2 - 1) \, du = \int u^5 - u^3 \, du =$

$\frac{u^6}{6} - \frac{u^4}{4} + C = \frac{\sec^6 x}{6} - \frac{\sec^4 x}{4} + C$