

MA 182
Section 5.7

An Integral Involving Powers of Sines and Cosines

Evaluate the integral $\int \sin^3 x \cos^3 x \, dx$

Rewrite the integral as $\int \sin^3 x \cos^2 x \cos x \, dx$ and then use the identity $\sin^2 \theta + \cos^2 \theta = 1$ to convert $\sin^3 x \cos^2 x$ to powers of $\sin x$. Use a u-substitution with $u = \sin x, du = \cos x \, dx$. You should then be able to integrate. Be sure to rewrite the answer in terms of the original variable. Your answer should involve powers of $\sin x$.