PROBLEM 4, MIDTERM 2 - SOLUTION

\[
\int \tan^2(x) \cos^4(x) \csc(x) \, dx = \int \frac{\sin^2(x)}{\cos^2(x)} \cos^4(x) \frac{1}{\sin(x)} \, dx
\]

\[
= \int \sin(x) \cos^2(x) \, dx.
\]

Next perform substitution \( u = \cos(x) \), so that \( du = -\sin(x) \, dx \). Thus,

\[
\int \sin(x) \cos^2(x) \, dx = - \int u^2 \, dx = - \frac{u^3}{3} + C = - \frac{\cos^3(x)}{3} + C.
\]

20 points. NO PARTIAL CREDIT for this problem.