Quiz 2b  15 min  Show Work

1) (30 points) If you’re integrating the product $\int \sin^m x \cos^n x \, dx$:

How many cases are there? 0 0

What are the cases (don’t describe, just name the cases).

one power is odd, both powers are even

2) (70 points) Integrate

$$ \int \frac{\sin^3 x}{\cos x} \, dx $$

$$ = \int \frac{\sin^2 x}{\cos x} \sin x \, dx $$

$$ = \int \frac{1-\cos^2 x}{\cos x} \sin x \, dx $$

$u = \cos x \quad du = (-1) \sin x \, dx \quad \Rightarrow \, du = \sin x \, dx$

$$ = \int \frac{1-u^2}{u} \, du = \int \frac{u^2-1}{u} \, du = \int (u-\frac{1}{u}) \, du $$

$$ = \frac{u^2}{2} - \ln |u| + c $$

$$ = \frac{\cos^2 x}{2} - \ln |\cos x| + c $$