

WRITE YOUR NAME:

MAC 2312 Quiz 22  
Tuesday April 16th

Evaluate the integral.

$$\int_0^{\pi/6} \sin^2 x \cos x dx$$

Sub  $u = \sin x \Rightarrow \underline{du} = \underline{\cos x dx}$

If  $x=0$  then  $u = \sin 0 = 0$

If  $x = \frac{\pi}{6}$  then  $u = \sin \frac{\pi}{6} = \frac{1}{2}$

$$\int_{x=0}^{x=\pi/6} \sin^2 x \cos x dx = \int_{u=0}^{u=1/2} u^2 du$$

$$= \left[ \frac{u^3}{3} \right]_{u=0}^{u=1/2} = \frac{1}{3} \left( \frac{1}{2} \right)^3 = \frac{1}{3} \cdot \frac{1}{8} = \frac{1}{24}$$