

Calculus 2	Quiz 2	
		NAME
10 points	2 pages	Ciara Swann

**DIRECTIONS:** Show all the work in the space provided. Box the final answers, and follow the indicated directions.

Calculate the following integrals:

$$1. \int x\sqrt{4-x^2} dx \quad \begin{array}{l} u = 4-x^2 \\ du = -2x dx \\ \frac{du}{-2} = x dx \end{array}$$

$$\int \sqrt{u} \cdot \frac{du}{-2} =$$

$$-\frac{d}{2} \int u^{\frac{1}{2}} du =$$

$$-\frac{1}{2} \cdot \frac{u^{\frac{1}{2}+1}}{\frac{1}{2}+1} =$$

$$-\frac{1}{2} \cdot \frac{u^{3/2}}{3/2} =$$

$$-\frac{1}{2} \cdot \frac{2}{3} u^{3/2} =$$

$$\boxed{-\frac{1}{3} (4-x^2)^{3/2} + C}$$

$$2. \int_0^{\frac{\pi}{2}} \cos x \sin^2 x \, dx = \left[ \begin{array}{ll} w = \sin x & \\ dw = \cos x \, dx & \\ 0 & \leftarrow 0 \\ \frac{1}{3} & \leftarrow \frac{\pi}{2} \end{array} \right] =$$

$$\int \cos x \sin^2 x \, dx$$

$$\int w^2 \, dw =$$

$$\frac{1}{3} w^3 \rightarrow \frac{1}{3} \sin^3 x + C$$

$$\frac{1}{3} \sin^3\left(\frac{\pi}{2}\right) - \frac{1}{3} \sin^3(0) =$$

$$\boxed{\frac{1}{3}}$$