Math 222
QUIZ 1

Name:
Circle Your Section: 349 350

1. Evaluate the following integral:
\[ \int_0^a x^2 \cos x \, dx. \]
2. Suppose $h(x)$ is a continuous function. Suppose also that $H(x)$ is an antiderivative of $h(x)$.

(a) What can you say about the relationship between $H(x)$ and $\int_a^x h(t)dt$?

(b) Calculate $\frac{d}{dx} \int_a^x h(t)dt$.

(c) Calculate $\frac{d}{dx} \left( \int_a^b h(t)dt \right)$.

(d) Suppose also that $h(x)$ is continuously differentiable. Calculate $\int_a^b \left( \frac{d}{dx} h(x) \right) dx$.

3. **Bonus:** What is your favorite animal? Why?