

Name: _____

Section: _____

Answer all of the questions in the space provided. This quiz will not be collected or graded.

1. Use the fundamental theorem of calculus to solve the following problems.

- (a) Find the derivative of

$$h(x) = \int_{-x^3}^{x^2} \sin(t) dt.$$

- (b) Find the limit below by first expressing the limit as an integral and then evaluating the integral.

$$\lim_{n \rightarrow \infty} \sum_{i=1}^{2n} \frac{i^3}{n^4}$$

2. Evaluate the indefinite integral

$$\int \frac{1 + 3x^2 + x^5}{x^4} dx.$$

3. Evaluate using the substitution rule,

$$\int_1^3 \frac{x}{(x^2 + 1)^2} dx.$$