

Name _____

- You have 20 minutes
- No calculators
- Show sufficient work

1. (2 points) Evaluate the following definite integral. Simplify your answer.

$$\int_{-3}^{-1} \frac{x-6}{x^2} dx$$

2. (2 points each) Evaluate the following indefinite integrals.

(a) $\int \frac{5x^2 - 5}{x^4 - 1} dx$

(b) $\int \frac{\sin(x) \cos^2(x)}{(1 - \sin^2(x))^2} dx$

3. (2 points) Suppose $g(x) = \int_2^{x^5} \sin(t^2) dt$. Find $g''(x)$.

4. (2 points) The height of a tree is currently 20 inches. If the tree's height increases by $6t$ inches per year where t is measured in years from now, then what will the tree's height be in 5 years?