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?