Be sure to show your work. Unsupported answers receive no credit.

1. Find each of the following.
   
   (a) \( \int x^9 \, dx = \frac{x^{10}}{10} + C \).
   
   (b) \( \int \sqrt{x} \, dx = \int x^{1/2} \, dx = \frac{x^{3/2}}{(3/2) + 1} + C = \frac{2}{3} x^{3/2} + C \).
   
   (c) \( \int \frac{1}{x} \, dx = \ln |x| + C \).
   
   (d) \( \int (3e^{4x} - 5x^3 + 2) \, dx = 3 \cdot \frac{e^{4x}}{4} - 5 \cdot \frac{x^4}{4} + 2x + C = \frac{3}{4} e^{4x} - \frac{5}{4} x^4 + 2x + C \).

2. Find the average value of \( x^2 \) on the interval \([-1, 1]\).

   **Solution:** The average value is \( \frac{1}{1 - (-1)} \int_{-1}^1 x^2 \, dx = \frac{1}{2} \cdot \frac{x^3}{3} \bigg|_{-1}^{1} = \frac{1}{6} (1^3 - (-1)^3) = \frac{1}{3} \).