

Analysis 1, Summer 2024  
**Written Assignment 4**

*You must show your work for every task.*

1. Give the following indefinite integrals:

(a)  $\int (9x^3 - 7) dx$       (c)  $\int 5xe^{6x} dx$

(b)  $\int (x^2 + \sqrt{x}) dx$       (d)  $\int 5xe^{6x^2} dx$

2. Calculate  $\int_{-\pi/2}^{\pi/2} 8x \sin(x) dx$ .

3. Calculate  $\int_0^{25} \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$ .

4. (a) Find the critical points of  $e^{x^2}(4x + 9)$ .

(b) Calculate  $\lim_{x \rightarrow 1} \frac{3x - \ln(x^3) - 3}{(x + 1)^2 - 4x}$ .