

Reading Stewart §6.3, 6.4.

1. Compute the derivatives of the following functions.

(a) $f(x) = (3x^2 + 2x^3)e^{4x}$

(b) $g(x) = \frac{e^x}{4e^x - 1}$

(c) $h(x) = \sqrt{3 - 4e^{-2x}}$

2. Compute the following definite and indefinite integrals.

(a) $\int_0^1 (e^{2x} + x^{2e}) dx$

(b) $\int x e^{5x^2} dx$

(c) $\int (e^x + e^{-x})^2 dx$

3. Compute the following indefinite integrals.

(a) $\int \frac{e^x}{3 + e^x} dx$

(b) $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$

(c) $\int e^x \cos(e^x) dx$

4. Compute $\int_0^{\ln 2} \frac{1}{e^{3x} (2 - e^{-3x})^2} dx$

5. Compute the following quantities:

(a) $\ln\left(\frac{1}{e^2}\right)$

(b) $\log_3(9\sqrt{3})$

6. Solve the following equations for x :

(a) $e^{3x+1} = 5$

(b) $\ln(2x - 7) = 3$