

Antiderivatives

Problem 1

Find $\int(\frac{1}{x} + 2e^{2x})dx$. (Find the function(s) whose derivative is $\frac{1}{x} + 2e^{2x}$.)

Problem 2

Find the following antiderivatives (“indefinite integrals”):

1.

$$\int(3e^{2x} + 2e^{-x})dx = \frac{3}{2}e^{2x} - 2e^{-x} + C.$$

2.

$$\int\left(\frac{4}{\sqrt{1-x^2}} - \frac{9}{x}\right) = 7 \tan^{-1}(x) + 4 \ln |x| + C$$

Problem 3

Find the general anti-derivative of $y' = 6x^2 + 8$ when $f(2) = -35$.