

(1)[5 points] Use the definition of the definite integral in the form $\lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i) \Delta x$ to evaluate

$$\int_0^3 (3 + x^2) dx .$$

Recall that

$$\sum_{i=1}^n c = cn \quad \text{where } c \text{ is a constant,} \quad \sum_{i=1}^n i = \frac{n(n+1)}{2}, \quad \sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6} .$$

(2)[5 points] Find

$$\int_0^1 x^2(1 + 2x^3)^5 dx$$

(3)[5 points] Find

$$\int \frac{\ln x}{x^2} dx$$