

Linearity of integration

Homework

$$\int (\alpha f(x) + \beta h(x)) \, dx = \alpha \int f(x) \, dx + \beta \int h(x) \, dx$$

№1. Find the general form of antiderivatives of the following functions:

1. $f(x) = \frac{9}{\sin^2 x} + \frac{x^4}{4};$

3. $f(x) = \frac{1}{x^3} + \frac{3}{x^4};$

2. $f(x) = \frac{4}{\sqrt{x}} + x^3;$

4. $f(x) = \sqrt{x} - \frac{6}{x^5}.$

№2. For the following functions $f(x)$ find an antiderivative $F(x)$ which satisfies the specified condition:

1. $f(x) = 5 + 6x - 9x^2, \quad F(-3) = 100;$

2. $f(x) = 13x^{12} - \frac{6}{7\sqrt{x}}, \quad F(1) = 0;$

3. $f(x) = \frac{3}{x^2} - 4, \quad F(1.5) = -3.$