

## Урок 4. Интегрирование степенной функции

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C, \text{ где } n \neq -1$$

$$\int x^{-1} dx = \int \frac{1}{x} dx = \int \frac{dx}{x} = \ln x + C$$

1.  $\int x^3 dx$

2.  $\int x^2 dx$

3.  $\int 5x^4 dx$

4.  $\int (x^3 - x^2) dx$

5.  $\int x^{-5} dx$

6.  $\int (4x^3 - 2 + 5x) dx$

7.  $\int 27 dx$

8.  $\int dx$

9.  $\int \left( 4x^2 - 20x^3 + \frac{1}{3}x^8 \right) dx$

10.  $\int \left( \frac{x}{3} \right) dx$

11.  $\int \frac{dx}{5}$

12.  $\int \frac{xdx}{-12}$

13.  $\int (-5x^7 - 12x^3 + 6x^7) dx$

14.  $\int \left( \frac{1}{x^8} - \frac{2}{x^2} \right) dx$

15.  $\int \sqrt{3x} dx$

16.  $\int 5\sqrt[4]{x} dx$

17.  $\int (\sqrt[6]{x} + 13) dx$

18.  $\int (\sqrt[5]{x} - 2x) dx$

19.  $\int \left( 12\sqrt{3x^3} + 4x^5 - \frac{1}{x^6} \right) dx$

20.  $\int \left( \frac{x^3}{12} + x\sqrt{3} - 100 \right) dx$

21.  $\int (x+2)^2 dx$

22.  $\int (x^2 - 4)^2 dx$

23.  $\int (5x^4 - 2x)^2 dx$

24.  $\int (\sqrt[3]{x} - 2)^2 dx$

25.  $\int (7\sqrt{x} + x^{-5}) dx$

26.  $\int \left( \frac{1}{\sqrt{x}} - \frac{1}{x^3} + 10 \right) dx$

27.  $\int \frac{(1+\sqrt{x})^2}{x^2} dx$

28.  $\int \frac{1+x+x^2}{x\sqrt{x}} dx$

29.  $\int \frac{2x^2 - 4\sqrt{x} + \sqrt[5]{x}}{\sqrt{x}} dx$

30.  $\int \frac{2+2x\sqrt{x} - x^{-5}}{x} dx$