

1. Пракмызы

$$\int \left( x + \frac{1}{x} \right) dx = \int x dx + \int \frac{1}{x} dx = \frac{x^2}{2} + \ln|x| + C$$

2. Пракмызы

$$\int e^{\sin x} \cos x dx = e^{\sin x} + C$$

3. Пракмызы

$$\int \sqrt{1-2x-x^2} dx = \int \sqrt{2-(x+1)^2} dx = \begin{cases} u = x+1 \\ x = u-1 \\ dx = du \end{cases}$$

$$\int \sqrt{2-u^2} du = \int 2 \cos^2 u du = 2 \int \frac{\cos(2u) + 1}{2} du = \int \cos(2u) du + \int 1 du$$

$$= \frac{\sin 2u}{2} + u = \arcsin\left(\frac{u}{\sqrt{2}}\right) + \frac{u\sqrt{2-u^2}}{2}$$

$$= \arcsin\left(\frac{x+1}{\sqrt{2}}\right) + \frac{(x+1)\sqrt{-x^2-2x+1}}{2} + C$$

4. Пракмызы

$$\int \frac{2x-1}{x^2-9} dx = \int \frac{2x-1}{(x-3)(x+3)} dx = \int \frac{7}{x+3} +$$



$$+ \frac{5}{6(x-3)} dx = \frac{7 \ln|x+3|}{6} + \frac{5 \ln|x-3|}{6} + C$$

$$+ C = \frac{7 \ln|x+3| + 5 \ln|x-3|}{6} + C$$

5. Integrationen

$$\int \cos^6(x) dx = \int \frac{(\cos(2x) + 1)^3}{8} dx = \begin{cases} u = 2x \\ \dot{x} = \frac{u}{2} \end{cases}$$

$$\frac{1}{8} \int \frac{(\cos(u) + 1)^3}{2} du = \frac{1}{16} \int \cos^3 u + 3 \cos^2 u + 3 \cos u + 1 du = \frac{1}{16} \left( \sin(u) - \frac{\sin^3 u}{3} + \right.$$

$$\left. + 3 \frac{\sin 2u}{4} + \frac{u}{2} \cdot (3 \sin u + u) \right) + C =$$

$$= \frac{3 \sin(2u)}{64} - \frac{\sin^3(u)}{48} + \frac{\sin(u)}{4} +$$

$$+ \frac{5u}{32} + C = \frac{3 \sin(4x)}{64} - \frac{\sin^3(2x)}{48} + \frac{\sin(2x)}{4} +$$

$$+ \frac{\sin(2x)}{4} + \frac{5x}{16} + C$$

$$\int_0^1 x dx + \int_0^1 xy^2 dy = \int_0^1 x dx + \int_0^1 xy^2 dy =$$