1 Практикум

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

2 Практикум

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

3 Практикум

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

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

$$= 2\left(\frac{1}{2}\int \cos(2u)\,du + \frac{1}{2}\int 1\,du\right) =$$

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

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

$$+ \frac{\sqrt{-x^2-2x+1}}{2} + C$$

4 Практикум

$$\int \frac{2x-1}{x^2-9}\,dx = \int \frac{2x-1}{(x-3)(x+3)}\,dx = \int \frac{7}{6(x+3)} +$$