

Практика * Упрощение. Часть 6.

$$9.1.3. \int_0^{\pi} (2x + \sin 2x) dx = \int_0^{\pi} 2x dx + \int_0^{\pi} \sin 2x dx;$$

$$= 2 \int_0^{\pi} x dx + \frac{1}{2} \int_0^{\pi} \sin 2x dx = 2 \left(\frac{x^2}{2} \Big|_0^{\pi} \right) + \frac{1}{2} \left(\cos 2x \Big|_0^{\pi} \right)$$

$$= 2 \left(\frac{\pi^2}{2} - 0 \right) + \frac{1}{2} (\cos 2\pi - \cos 0) = \pi^2$$

$$9.1.4. \int_0^{\log 2} 1^x \cdot 5^x dx = \int_0^{\log 2} 5^x dx \Rightarrow u = 5^x \Rightarrow u' = 5^x \ln 5; \quad 5^x = u \Rightarrow$$

$$\Rightarrow 5^x = \frac{u}{\ln 2} \Big|_0^{\log 2} = 5^x \cdot \left(\frac{2^x}{\ln 2} \Big|_0^{\log 2} \right) - \int_0^{\log 2} \frac{2^x}{\ln 2} \cdot 5^x \ln 5 dx$$