

2023-2024

$$1. \quad L \quad x^2 + \frac{y^2}{2} + z^2 = 1 \quad x + z = 1 \quad x > 1$$

$$2. \quad \int_L y dx + z dy + x dz - \int_L \frac{y dx + (1-x) dy}{(x-1)^2 + 100y^2}, \quad L \quad (0; 2023) \quad 2024$$

$$3. \quad \iint_S \frac{1}{8z - z^2} dS, \quad S \quad x^2 + y^2 + (z-1)^2 = 16 \quad x^2 + y^2 = 4y$$

$$4. \quad \iint_{x^2 + y^2 = 4} x^2 + y^2 = 4 \quad z = 0; z = 4 \quad (x + 2y) dx dy + (xz - y) dy dz \quad (1)$$

$$5. \quad \left(\right)$$

$$(1) \quad \sum_{n=1}^{\infty} (-1)^n \ln 1 + \frac{(2n-1)!!}{(2n)!!}$$

$$(2) \quad \sum_{n=1}^{\infty} 1 + \frac{1 + \frac{1}{n}}{2^n}$$

$$6. \quad \left(\right)$$

$$(1) \quad \int_{-\frac{1}{e}}^{\frac{1}{e}} \frac{\ln \ln x}{\ln x} \sin x dx$$

$$(2) \quad \int_0^e \frac{\sin x}{x^p + \sin x} dx$$

$$7. \quad \sum_{n=1}^{\infty} (n \ln n) a_n$$

$$(1) \quad \sum_{n=1}^{\infty} a_n$$

$$(2) \quad \sum_{n=1}^{\infty} (-1)^n a_n$$