

№1000

$$1) S = \int_2^4 x^3 dx = \frac{x^4}{4} \Big|_2^4 = \frac{4^4}{4} - \frac{2^4}{4} = 64 - 4 = \mathbf{60}$$

$$2) S = \int_3^4 x^2 dx = \frac{x^3}{3} \Big|_3^4 = \frac{4^3}{3} - \frac{3^3}{3} = \frac{64}{3} - \frac{27}{3} = \frac{37}{3} = \mathbf{12\frac{1}{3}}$$

$$3) S = \int_{-2}^1 (x^2 + 1) dx = \left(\frac{x^3}{3} + x \right) \Big|_{-2}^1 = \left(\frac{1}{3} + 1 \right) - \left(-\frac{8}{3} - 2 \right) = 1\frac{1}{3} + 4\frac{2}{3} = \mathbf{6}$$

$$4) S = \int_0^2 (x^3 + 1) dx = \left(\frac{x^4}{4} + x \right) \Big|_0^2 = 6 - 0 = \mathbf{6}$$

№1004

$$1) \int_0^1 x dx = \frac{x^2}{2} \Big|_0^1 = \frac{1}{2} - 0 = \frac{1}{2}$$

$$2) \int_0^3 x^2 dx = \frac{x^3}{3} \Big|_0^3 = \frac{27}{3} - 0 = \mathbf{9}$$

$$3) \int_{-1}^2 3x^2 dx = x^3 \Big|_{-1}^2 = 8 + 1 = \mathbf{9}$$

$$4) \int_{-2}^3 2x dx = x^2 \Big|_{-2}^3 = 9 - 4 = \mathbf{5}$$

№1005

$$1) \int_1^e \frac{1}{x} dx = \ln x \Big|_1^e = \ln e - \ln 1 = 1 - 0 = \mathbf{1}$$

$$2) \int_0^{\ln 2} e^x dx = e^x \Big|_0^{\ln 2} = e^{\ln 2} - e^0 = 2 - 1 = \mathbf{1}$$

$$3) \int_{-\pi}^{2\pi} \cos x dx = \sin x \Big|_{-\pi}^{2\pi} = \sin 2\pi - \sin(-\pi) = \mathbf{0}$$

$$4) \int_{-2\pi}^{\pi} \sin x dx = -\cos x \Big|_{-2\pi}^{\pi} = -\cos \pi - (-\cos(-2\pi)) = 1 + 1 = \mathbf{2}$$