基本問題を確認しよう

数Ⅱ　定積分の計算(解答)

1　(1) $\displaystyle\int_1^3 x^2\,dx=\left[\frac{1}{3}x^3\right]_1^3=9-\frac{1}{3}=\frac{26}{3}$

(2) $\displaystyle\int_{-2}^1(x^2-2x+3)\,dx=\left[\frac{1}{3}x^3-x^2+3x\right]_{-2}^1=\left(\frac{1}{3}-1+3\right)-\left(-\frac{8}{3}-4-6\right)=15$

(3) $\displaystyle\int_0^3(x-1)^2\,dx=\left[\frac{1}{3}(x-1)^3\right]_0^3=\frac{8}{3}-\left(-\frac{1}{3}\right)=3$

(4) $\displaystyle\int_2^5(x-2)(x-5)\,dx=-\frac{1}{6}(5-2)^3=-\frac{9}{2}$

2　$\displaystyle\int_1^2(2x-1)\,dx+\int_1^2(x^2-2x)\,dx=\int_1^2\{(2x-1)+(x^2-2x)\}\,dx$

$\displaystyle=\int_1^2(x^2-1)\,dx=\left[\frac{1}{3}x^3-x\right]_1^2=\left(\frac{8}{3}-2\right)-\left(\frac{1}{3}-1\right)=\frac{4}{3}$