

数Ⅱ(定積分①)

〇〇次の定積分を求めよう。

$$\textcircled{1} \int_1^2 (6x^2 + 1) dx$$

$$\textcircled{2} \int_0^3 (4x - 3) dx$$

$$\textcircled{3} \int_1^2 (x-1)(x-2) dx$$

$$\textcircled{4} \int_{-3}^3 (6x^2 - 8x + 3) dx$$

$$\textcircled{5} \int_5^5 (8x^3 - 3x^2 + x - 7) dx$$

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数Ⅱ(定積分①)

〇〇次の定積分を求めよう。

$$\begin{aligned} \textcircled{1} \int_1^2 (6x^2 + 1) dx &= [2x^3 + x]_1^2 \\ &= (16 + 2) - (2 + 1) = \underline{15} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \int_0^3 (4x - 3) dx &= [2x^2 - 3x]_0^3 \\ &= 18 - 9 = \underline{9} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \int_1^2 (x-1)(x-2) dx &= \left[\frac{1}{3}x^3 - \frac{3}{2}x^2 + 2x \right]_1^2 \\ (x^2 - 3x + 2) &= \left(\frac{8}{3} - 6 + 4 \right) - \left(\frac{1}{3} - \frac{3}{2} + 2 \right) = \underline{-\frac{1}{6}} \end{aligned}$$

$$\begin{aligned} \int_{\alpha}^{\beta} (x-\alpha)(x-\beta) dx \\ = -\frac{1}{6}(\beta-\alpha)^3 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \int_{-3}^3 (6x^2 - 8x + 3) dx &= \int_{-3}^3 (6x^2 + 3) dx + \int_{-3}^3 (-8x) dx \\ &= 2 \int_0^3 (6x^2 + 3) dx = 2 [2x^3 + 3x]_0^3 = 2(54 + 9) = \underline{126} \end{aligned}$$

$$\textcircled{5} \int_5^5 (8x^3 - 3x^2 + x - 7) dx = \underline{0}$$