

3C積分51

次の不定積分を求めよ。

(1) $\int \sin 2x \cos x dx$

(2) $\int \sin 6x \sin 3x dx$

(3) $\int \cos 2x \sin 5x dx$

(4) $\int \cos 4x \cos 5x dx$

[基本問題]

(1) 与式 $= \frac{1}{2} \int (\sin 3x + \sin x) dx$
 $= -\frac{1}{2} \left(\frac{1}{3} \cos 3x + \cos x \right) + C$
 $\therefore \underline{-\frac{1}{6} \cos 3x - \frac{1}{2} \cos x + C}$

(2) 与式 $= -\frac{1}{2} \int (\cos 9x - \cos 3x) dx$
 $= -\frac{1}{2} \left(\frac{1}{9} \sin 9x - \frac{1}{3} \sin 3x \right) + C$
 $\therefore \underline{-\frac{1}{18} \sin 9x + \frac{1}{6} \sin 3x + C}$

(3) 与式 $= \frac{1}{2} \int (\sin 7x + \sin 3x) dx$
 $= -\frac{1}{2} \left(\frac{1}{7} \cos 7x + \frac{1}{3} \cos 3x \right) + C$
 $\therefore \underline{-\frac{1}{14} \cos 7x - \frac{1}{6} \cos 3x + C}$

(4) 与式 $= \frac{1}{2} \int (\cos 9x + \cos x) dx$
 $= \frac{1}{2} \left(\frac{1}{9} \sin 9x + \sin x \right) + C$
 $\therefore \underline{\frac{1}{18} \sin 9x + \frac{1}{2} \sin x + C}$