

## 例題 7

$$\int \sin^3 x \, dx$$

$$= \int \sin^2 x \cdot \sin x \, dx$$

$$= \int (1 - \cos^2 x) \sin x \, dx$$

$$\cos x = t \text{ とおくと}$$

$$-\sin x \, dx = dt$$

$$\left( \frac{5}{7} \text{式} \right) = \int -(1 - t^2) \, dt$$

$$= \frac{1}{3} \cos^3 x - \cos x + C$$

$$\int \sin^3 x \, dx$$

× 三 (3倍角)

$$\sin 3x = 3\sin x - 4\sin^3 x$$

$$\therefore \sin^3 x = \frac{3\sin x - \sin 3x}{4}$$

$$\left( \frac{5}{7} \text{式} \right) = \int \frac{3\sin x - \sin 3x}{4} \, dx$$

$$= -\frac{3}{4} \cos x + \frac{1}{12} \sin 3x + C$$