

MORE INTEGRATION BY SUBSTITUTION

①

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

Use $u = \sin x$

②

$$\int \frac{1 + \cos x}{\sin x} \, dx$$

Use $u = \cos x$

③

$$\int_0^{\sqrt{2}} \frac{x^2}{\sqrt{4-x^2}} \, dx$$

use $x = 2 \sin \theta$

④

$$\int_0^1 \frac{1}{(4-x^2)^{\frac{3}{2}}} \, dx$$

use $x = 2 \sin \theta$

⑤

$$\int_1^{\sqrt{2}} \frac{1}{x^2 \sqrt{4-x^2}} \, dx$$

use $x = 2 \cos \theta$

⑥

$$\int_0^1 \frac{1}{(1+x^2)^2} \, dx$$

use $x = \tan \theta$

⑦

$$\int_0^2 \sqrt{16-3x^2} \, dx$$

use $x = \frac{4}{\sqrt{3}} \sin \theta$

⑧

$$\int_0^{\frac{1}{2}} \frac{1}{4x^2+3} \, dx$$

use $x = \frac{\sqrt{3}}{2} \tan \theta$