INTEGRATION FORMULAE

① $\int x^n dx = \frac{x^{n+1}}{n+1} + c \quad (n \neq 1)$

② $\int \cos x \, dx = \sin x + c$

③ $\int \sin x \, dx = -\cos x + c$

④ $\int \sec^2 x \, dx = \tan x + c$

⑤ $\int \operatorname{cosec}^2 x \, dx = -\cot x + c$

⑥ $\int \sec x \tan x \, dx = \sec x + c$

⑦ $\int \operatorname{cosec} x \cot x \, dx = -\operatorname{cosec} x + c$

⑧ $\int \tan x \, dx = \log(\sec x) + c$

⑨ $\int \cot x \, dx = \log(\sin x) + c$

⑩ $\int \sec x \, dx = \log(\sec x + \tan x) + c$

⑪ $\int \operatorname{cosec} x \, dx = \log(\operatorname{cosec} x - \cot x) + c$

⑫ $\int e^x dx = e^x + c$

⑬ $\int a^x dx = \frac{a^x}{\log a} + c$

⑭ $\int \frac{1}{x} dx = \log(x) + c$

(15) $\int \frac{dx}{\sqrt{1-x^2}} = \sin^{-1}x + c = -\cos^{-1}x + c$

(16) $\int \frac{dx}{(1+x^2)} = \tan^{-1}x + c = -\cot^{-1}x + c$

(17) $\int \frac{dx}{x\sqrt{x^2-1}} = \sec^{-1}x + c = -\operatorname{cosec}^{-1}x + c$

Some Special Fns

(18) $\int \frac{dx}{x^2+a^2} = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + c$

(19) $\int \frac{dx}{x^2-a^2} = \frac{1}{2a}\log\left(\frac{x-a}{x+a}\right) + c$

(20) $\int \frac{dx}{a^2-x^2} = \frac{1}{2a}\log\left(\frac{a+x}{a-x}\right) + c$

P.T.O. →

(21) $\int \frac{dx}{\sqrt{x^2+a^2}} = \log\left(x+\sqrt{x^2+a^2}\right)+c$

(22) $\int \frac{dx}{\sqrt{x^2-a^2}} = \log\left(x+\sqrt{x^2-a^2}\right)+c$

(23) $\int \frac{dx}{\sqrt{a^2-x^2}} = \sin^{-1}\left(\frac{x}{a}\right)+c$

(24) $\int \sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left(x+\sqrt{x^2+a^2}\right)+c$

(25) $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left(x+\sqrt{x^2-a^2}\right)+c$

(26) $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}\sin^{-1}\left(\frac{x}{a}\right)+c$