

Mo	Tu	We	Th	Fr	Sa	Su
					01	02
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

समाकलन (Integration)



WEDNESDAY

समाकलन Integration अवकलन का प्रतिलोम है।

Rules:- $\int x^n dx = \frac{x^{n+1}}{n+1} + C$

$$\int e^x dx = e^x + C$$

$$\int a^x dx = \frac{a^x}{\log_e a} + C$$

$$\int \frac{1}{x} dx = \log_e x + C$$

$$\int \sin x dx = -\cos x + C$$

$$\int \cos x dx = \sin x + C$$

Case - 1

$$\textcircled{I} \int x^4 dx$$
$$= \int \frac{x^{4+1}}{4+1} dx$$
$$= \frac{x^5}{5} + C$$

$$\textcircled{II} \int 5x^4 dx$$
$$= 5 \int \frac{x^{4+1}}{4+1} dx$$
$$= \frac{5x^5}{5} + C$$
$$= x^5 + C$$

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(iii)

$$\int dx$$

THURSDAY

$$= x + C$$

(iv)

$$\int \frac{1}{x^{\frac{7}{2}}} dx$$

$$= \int x^{-\frac{7}{2}} dx$$

$$= \int \frac{x^{-\frac{7}{2} + 1}}{-\frac{7}{2} + 1} dx$$

$$= \frac{x^{-\frac{5}{2}}}{-5} + C$$

$$= -\frac{2}{5} x^{-\frac{5}{2}} + C$$

$$\textcircled{1} \int 5x^{-4} dx$$

$$= 5 \int \frac{x^{-4+1}}{-4+1} dx$$

Notes

$$= \frac{5x^{-3}}{-3} + C$$

(vi) $\int (4x^3 + 3x^2 + 2x + 5) dx$

$$= \int 4x^3 dx + \int 3x^2 dx + \int 2x dx + \int 5 dx$$

$$= 4 \int \frac{x^{3+1}}{3+1} dx + 3 \int \frac{x^{2+1}}{2+1} dx + 2 \int \frac{x^{1+1}}{1+1} dx + 5 \int dx$$

$$= 4 \cdot \frac{x^4}{4} + 3 \cdot \frac{x^3}{3} + 2 \cdot \frac{x^2}{2} + 5x + C$$

$$= x^4 + x^3 + x^2 + 5x + C$$