

29/08/xy Class-XII^{sc} (MATHS) K. Kanhaiya

Find the following integrals :-

$$i) \int (4e^{3x} + 1) dx$$

$$\text{Ans} \rightarrow \int 4e^{3x} dx + \int dx$$

$$4 \int e^{3x} dx + x + C$$

$$4 \frac{e^{3x}}{3} + x + C.$$

$$ii) \int x^2 \left(1 - \frac{1}{x^2}\right) dx$$

$$\int (x^2 - 1) dx$$

$$\int x^2 dx - \int dx$$

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

$$iii) \int (ax^2 + bx + c) dx = a \int x^2 dx + b \int x dx + \int c dx$$
$$= \frac{ax^3}{3} + \frac{bx^2}{2} + cx + C.$$

$$11) \int (1-x) \sqrt{x} dx$$

$$\int \sqrt{x} dx - \int x \sqrt{x} dx$$

$$\int x^{1/2} dx - \int x \cdot x^{1/2} dx$$

$$\int x^{1/2} dx - \int x^{3/2} dx$$

$$\frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} - \frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1} + c$$

$$\left[\int x^n dx = \frac{x^{n+1}}{n+1} + c \right]$$

$$\frac{2}{3} x^{3/2} - \frac{2}{5} x^{5/2} + c$$

$$12) \int 3 dx = 3 \int dx$$

$$= 3x + c$$

Do Ex- 7.1 [from 1 to 19]