

Indefinite Integrals Ex 19.1 Q1

(i)

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

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

(ii)
$$\int x^{\frac{5}{4}} dx = \frac{x^{\frac{5}{4}} + 1}{\frac{5}{4} + 1} + c$$

$$= \frac{x^{\frac{5+4}{4}} + c}{\frac{5+4}{4}}$$

$$= \frac{4x^{\frac{9}{4}}}{9} + c$$

(iii)
$$\int \frac{1}{x^{5}} dx = \int x^{-5} dx$$

$$= \frac{x^{-5+1}}{-5+1} + C$$

$$= \frac{x^{-4}}{-4} + C$$

$$= \frac{-1}{4x^{4}} + C$$

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

$$= \int x^{\frac{-3}{2}} dx$$

$$= \int x^{\frac{-3}{2}} dx$$

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

$$= \frac{x^{\frac{-1}{2}}}{\frac{-1}{2}} + C$$

$$= -2 \times \frac{1}{\sqrt{x}} + C$$

$$= \frac{-2}{\sqrt{x}} + C$$

$$\int 3^x dx = \frac{3^x}{\log 3} + c$$

$$\left[\because \int a^x dx = \frac{a^x}{\log a} + c \right]$$

$$\int \frac{1}{\sqrt[3]{x^2}} dx = \int \frac{1}{2} dx$$

$$= \int x^{\frac{-2}{3}} dx$$

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

$$= \frac{x^{\frac{1}{3}}}{\frac{1}{3}} + c$$

$$= 3\sqrt[3]{x} + c$$

(vii)

$$\int 3^{2\log_8 x} dx = \int 3^{\log_8 x^2} dx$$
$$= \int x^2 dx$$
$$= \frac{x^3}{3} + c$$

$$\left[:: a^{\log_{\bullet} x} = x \right]$$

(viii)

$$\int \log_x x \, dx = \int 1 dx$$
$$= x + c$$

********** END ********