



Indefinite Integrals Ex 19.1 Q2

(i)

$$\begin{aligned}\int \sqrt{\frac{1 + \cos 2x}{2}} dx &= \int \sqrt{\frac{2 \cos^2 x}{2}} dx && [\because \cos 2x = 2 \cos^2 x - 1] \\ &= \int \cos x dx \\ &= \sin x + c\end{aligned}$$

(ii)

$$\begin{aligned}\int \sqrt{\frac{1 - \cos 2x}{2}} dx &= \int \sqrt{\frac{2 \sin^2 x}{2}} dx \\ &= \int \sin x dx \\ &= -\cos x + c\end{aligned}$$

Indefinite Integrals Ex 19.1 Q3

Evaluate the integral as follows

$$\begin{aligned}\int \frac{e^{6 \log_e x} - e^{5 \log_e x}}{e^{4 \log_e x} - e^{3 \log_e x}} dx &= \int \frac{x^6 - x^5}{x^4 - x^3} dx \\ &= \int \frac{x^5 (x-1)}{x^3 (x-1)} dx \\ &= \int x^2 dx \\ &= \frac{x^3}{3} + C\end{aligned}$$

Indefinite Integrals Ex 19.1 Q4

$$\begin{aligned}\int \frac{1}{a^x b^x} dx &= \int a^{-x} b^{-x} dx \\ &= \int (ab)^{-x} dx \\ &= \frac{(ab)^{-x}}{\log_e (ab)^{-1}} + c \\ &= \frac{(ab)^{-x}}{-\log_e (ab)} + c \\ &= \frac{a^{-x} b^{-x}}{-\log_e (ab)} + c\end{aligned}$$

***** END *****

