



Indefinite Integrals Ex 19.1 Q5

$$\begin{aligned} \text{(i)} \quad & \int \frac{\cos 2x + 2 \sin^2 x}{\sin^2 x} dx \\ &= \int \frac{\cos 2x + 2 \sin^2 x}{\sin^2 x} dx \\ &= \int \frac{1 - 2 \sin^2 x + 2 \sin^2 x}{\sin^2 x} dx \\ &= \int \frac{1}{\sin^2 x} dx \\ &= \int \operatorname{cosec}^2 x dx \\ &= -\cot x + c \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & \int \frac{2 \cos^2 x - \cos 2x}{\cos^2 x} dx \\ &= \int \frac{2 \cos^2 x - (2 \cos^2 x - 1)}{\cos^2 x} dx \\ &= \int \frac{2 \cos^2 x - 2 \cos^2 x + 1}{\cos^2 x} dx \\ &= \int \frac{1}{\cos^2 x} dx \\ &= \int \sec^2 x dx \\ &= \tan x + c \end{aligned}$$

Indefinite Integrals Ex 19.1 Q6

$$\begin{aligned}
 \int \frac{e^{\log \sqrt{x}}}{x} dx &= \int \frac{\sqrt{x}}{x} dx \\
 &= \int x^{\frac{1}{2}} \times x^{-1} dx \\
 &= \int x^{\frac{1}{2}-1} dx \\
 &= \int x^{\frac{-1}{2}} dx \\
 &= \frac{x^{\frac{-1}{2}+1}}{\frac{-1}{2}+1} + C \\
 &= \frac{x^{\frac{1}{2}}}{\frac{1}{2}} \\
 &= 2\sqrt{x} + C
 \end{aligned}$$

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