



Indefinite Integrals Ex 19.8 Q49

$$\int \frac{e^{x-1} + x^{e-1}}{e^x + x^e} dx$$
$$= \frac{1}{e} \int \frac{e^x + ex^{e-1}}{e^x + x^e} dx$$

$$\text{Let } e^x + x^e = u$$

$$\Rightarrow (e^x + ex^{e-1}) dx = du$$

$$= \frac{1}{e} \int \frac{1}{u} du = \frac{1}{e} \log |u| + C$$

$$= \frac{1}{e} \log |e^x + x^e| + C$$

Indefinite Integrals Ex 19.8 Q50

$$\text{Let } I = \int \frac{1}{\sin x \cos^2 x} dx, \quad \text{then,}$$

$$I = \int \frac{\sin^2 x + \cos^2 x}{\sin x \cos^2 x} dx$$
$$= \int \frac{\sin^2 x}{\sin x \cos^2 x} dx + \int \frac{\cos^2 x}{\sin x \cos^2 x} dx$$
$$= \int \sec x \tan x dx + \int \operatorname{cosec} x dx$$
$$= \sec x + \log \left| \tan \frac{x}{2} \right| + c$$

$$\therefore I = \sec x + \log \left| \tan \frac{x}{2} \right| + c$$

Indefinite Integrals Ex 19.8 Q51

$$\text{Let } I = \int \frac{1}{\cos 3x - \cos x} dx, \quad \text{then,}$$

$$I = \int \frac{\sin^2 x + \cos^2 x}{-2 \sin 2x \sin x} dx$$

$$= \int \frac{\sin^2 x + \cos^2 x}{-4 \sin^2 x \cos x} dx$$

$$= -\frac{1}{4} \int \left[\frac{\sin^2 x}{\sin^2 x \cos x} + \frac{\cos^2 x}{\sin^2 x \cos x} \right] dx$$

$$= -\frac{1}{4} \int [\sec x + \operatorname{cosec} x \cot x] dx$$

$$= -\frac{1}{4} [\log |\sec x + \tan x| - \operatorname{cosec} x] + c$$

$$\therefore I = \frac{1}{4} [\operatorname{cosec} x - \log |\sec x + \tan x|] + c$$

***** END *****