$$u = sinx \qquad du = cos\, xdx \qquad dx = \frac{du}{cox}$$

$$= \quad x + 2\int u \quad cosx \quad .\frac{du}{cosx}$$

$$= x + 2 \int u \; du$$

$$= x + 2\,.\frac{u^2}{2} + c$$

$$= x + u^2 + c \qquad = x \; + sin^2x + c$$

Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cos x}{\sqrt{\sin x}} dx$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cos x}{\sqrt{\sin x}} dx = \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} (\sin x)^{\frac{-1}{2}} \cos x \; dx$$

$$u = sin\, x \quad , \; du = cosx\, dx \; , \quad dx = \frac{du}{cos\, x}$$

Evaluate $\int \frac{-\,e^{x^{-1}}}{x^2}\,dx$

$$= -\int x^{-2}\, e^{x^{-1}}\, dx$$

$$u = x^{-1} \quad , \quad du = -1 . x^{-2}\, dx$$

$$= -\int x^{-2}\, e^{u} \, . \frac{du}{-\,x^{-2}}$$

$$= \int e^{u}\, du = e^{u} + c = e^{x^{-1}} + C$$

Evaluate $\int \frac{e^{x} + e^{-x}}{e^{x} - e^{-x}}\, dx$

$$u = e^{x} - e^{-x} \quad , \quad du = e^{x} - e^{-x} \, .(-1)$$

$$du = e^{x} + e^{-x} dx \quad , \quad dx = \frac{du}{e^{x} + e^{-x}}$$

$$\int \frac{e^x + e^{-x}}{e^x - e^{-x}} \, dx = \int \frac{e^x + e^{-x}}{u} \cdot \frac{du}{e^x + e^{-x}}$$

$$= \int \frac{du}{u} = \ln(u) + c = \ln(\, e^x - \, e^{-x})$$

Evaluate $\int e^x \sqrt{1 - e^x} \quad dx$

$u = 1 - e^x \quad , \quad du = - e^x \, dx \quad , \quad dx = \frac{du}{- e^x}$

$$= \int e^x \sqrt{u} \quad . \quad \frac{du}{- e^x}$$

$$= - \int u^{\frac{1}{2}} \quad du \; = - \frac{2}{3} \; u^{\frac{3}{2}} + c \; = - \frac{2}{3} \; (1 - \; e^x)^{\frac{3}{2}} + c$$

Evaluate $\int \frac{(\ln x)^2}{x} \, dx$

$u = \ln x \quad , \quad du \; = \frac{1}{x} dx \quad , \quad dx = x \, du$

$$\int \frac{u^2}{x} \; . x \; du \; = \int u^2 du$$

$$= \frac{u^3}{3} + C$$

Evaluate $\int_0^1 (1+e^x)^2 e^x \, dx$

$$u = 1 + e^x \quad , \quad du = e^x dx \, , \quad dx = \frac{du}{e^x}$$

$$\int_0^1 (1+e^x)^2 e^x \, dx = \int_0^1 (u)^2 e^x \, . \, \frac{du}{e^x}$$

$$\int_0^1 (u)^2 . \; du = \left[\frac{u^3}{3}\right]_0^1 = \frac{1}{3}[u^3]_0^1$$

$$= \frac{1}{3}[1+e^x]_0^1 = \frac{1}{3} \; [1+e^1] - [1+e^0]$$

$$= \ldots$$

Good Luck ..