

$$1. \int (\cos 7x + \sqrt{x}) dx$$

$$\int \cos 7x dx + \int \sqrt{x} dx$$

Misal ;  $w = 7x$

$$dw = 7 dx$$

$$dx = \frac{1}{7} dw$$

$$\rightarrow \int \cos 7x dx$$

$$= \int \cos w \frac{1}{7} dw$$

$$= \int \frac{1}{7} \cos w dw$$

$$= \frac{1}{7} \sin w + c$$

$$= \frac{1}{7} \sin 7x + c$$

$$\rightarrow \int x^{\frac{1}{2}} dx$$

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

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

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

$$\int \cos 7x dx + \int x^{\frac{1}{2}} dx = \int \cos 7x dx + \int x^{\frac{1}{2}} dx$$

$$= \frac{1}{7} \sin 7x + \frac{2}{3} x^{\frac{3}{2}} + c$$

$$2. \int x^6 (6x^7 + 8)^2 dx$$

$$\int x^6 dx \cdot \int (6x^7 + 8)^2 dx$$

$$\rightarrow \int x^6 dx$$

$$\int x^6 dx = \frac{1}{6+1} x^{6+1} + c$$

$$= \frac{1}{7} x^7 + c$$

$$\triangleright \int (6x^7 + 8)^2 dx$$

Misal ;  $u = 6x^7 + 8$

$$\int u^2 dx = \frac{1}{3} u^3 + c$$

$$= \frac{1}{3} (6x^7 + 8)^2 + c$$

$$\int x^6 dx \cdot \int (6x^7 + 8)^2 dx = \left(\frac{1}{7} x^7\right) \left(\frac{1}{3} (6x^7 + 8)^2\right) + c$$

3.  $\int e^{\cos x} (\sin x) dx$

Misal ;  $u = \cos x$

$$\frac{du}{dx} = -\sin x$$

$$du = -\sin x dx$$

$$\int e^{\cos x} (\sin x) dx = \int e^u du$$

$$= e^u + c$$

$$= e^{\cos x}$$

4.  $\int \frac{\cos(\ln x)}{x} dx =$

Misal ;  $u = \ln x$

$$\frac{du}{dx} = \frac{1}{x}$$

$$du = \frac{1}{x} dx$$

$$\int \cos(u) \cdot du = \int \cos(u) \cdot du$$

$$= \sin u + c$$

$$= \sin(\ln x) + c$$

5.  $\int \frac{1}{2^2 + (x+3)^2} dx$

Misal ;  $u = x + 3$

$$\frac{du}{dx} = dx$$

$$du = 1$$

$$\int \frac{du}{4+u^2}$$

Misal ;

$$w = \frac{1}{2}u$$

$$u = 2w \quad \rightarrow \quad du = 2 \cdot dw$$

$$u^2 = 4w$$

$$\int \frac{2dw}{4+4w^2} = \int \frac{\cancel{2}dw}{\cancel{4}(1+w^2)}$$

$$= \int \frac{1}{2} \frac{dw}{(1+w^2)}$$

$$= \frac{1}{4} \arctan w + c$$

$$= \frac{1}{4} \arctan \left( \frac{1}{2}u \right) + c$$

$$= \frac{1}{4} \arctan \frac{1}{2}(x+3) + c$$