

$$\int x \sin x dx = \sin x - x \cos x + C$$

$$u = x$$

$$v = -\cos x$$

$$du = dx$$

$$dv = \sin x$$

$$x = (-\cos(x)) - \int -\cos(x) dx$$

$$-x \cdot \cos x + \int \cos x dx$$

$$-x \cos(x) + \sin(x) + C_1$$

$$\int \ln x dx = x \ln x - x + C$$

$$u = \ln x$$

$$v = x$$

$$du = dx$$

$$\ln x \cdot x - \int x \frac{1}{x} dx$$

$$dv = \frac{1}{x}$$

$$\ln x \cdot x - \int 1 dx$$

$$x \ln x - x + C_1$$

$$\int e^x \cos x dx = \frac{e^x}{2} (\sin x + \cos x) + C$$

$$\cos x \cdot e^x - \int e^x (\sin x) dx$$

$$\cos x \cdot e^x + \int \sin x \cdot e^x \cdot dx$$

$$\int e^x \cos x + \int e^x \cdot \cos x = \cos x \cdot e^x + \sin x \cdot e^x$$

$$2 \cdot \int e^x \cos x = \cos x \cdot e^x + \sin x \cdot e^x$$

$$\underline{\underline{\cos x \cdot e^x + \sin x \cdot e^x}} + C_1$$