Integral of $x^4 \cos x$

Session 76

$$\int x^4 \cos x \overset{dx}{\downarrow} = x^4 \sin - \int 4x^3 \sin x \, dx$$

$$\int 4x^3 \sin x \overset{dx}{\downarrow} = 4 \int x^3 \sin x \, dx$$

$$\int x^3 \sin x \overset{dx}{\downarrow} = -x^3 \cos x + \int 3x^2 \cos x \, dx$$

$$\int 3x^2 \cos x \, dx = 3 \int x^2 \cos x \, dx$$

$$\int x^2 \cos x \, dx = x^2 \sin x - \int 2x \sin x \, dx$$

$$\int 2x \sin x \overset{dx}{\downarrow} = 2 \int x \sin x \, dx$$

$$\int x \sin x \overset{dx}{\downarrow} = -x \cos x + \int \cos x \, dx$$

$$\int \cos x \overset{dx}{\downarrow} = \sin x$$