

1) Evaluate the integral

$$\int (x + 2)e^{2x} dx$$

2) Evaluate the integral

$$\int_0^\pi 3 \cos^3 2x dx$$

3) Evaluate the integral

$$\int \frac{x^2}{\sqrt{4-x^2}} dx$$

Some useful formulas:

$$\begin{aligned}\sin(2\theta) &= 2 \sin \theta \cos \theta \\ \cos(2\theta) &= \cos^2 \theta - \sin^2 \theta \\ &= 1 - 2 \sin^2 \theta \\ &= 2 \cos^2 \theta - 1\end{aligned}$$