1.

Determine as seguintes primitivas:

1)

$$\int (x^2 - 4x + \frac{5}{x})dx$$

$$= \frac{x^3}{3} - \frac{4x^2}{2} - 5\ln|x| + C$$

2)

$$\int \frac{2x+1}{x^2+x+3}dx$$

$$= \ln|x^2+x+3| + C$$

3)

$$\int \frac{3}{2x-1}dx$$

$$= \frac{3}{2}\int \frac{2}{2x-1}dx$$

$$= \frac{3}{2}\ln|2x-1| + C$$

4)

$$\int \frac{1}{x}\cos(\ln x)dx$$

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

5)

$$\int \frac{\sqrt{1+2\ln x}}{x}dx$$

$$= \int \frac{1}{x}(1+2\ln x)^{\frac{1}{2}}dx$$

$$= \frac{1}{2}\int \frac{2}{x}(1+2\ln x)^{\frac{1}{2}}dx$$

$$= \frac{1}{2}\frac{(1+2\ln x)^{\frac{3}{2}}}{\frac{3}{2}} + C$$

$$= \frac{(1+2\ln x)^{\frac{3}{2}}}{3} + C$$

6)

$$\int \sin x \cos^4 x \, dx$$

$$= -\frac{1}{5}\cos^5 x$$

2.

Recorrendo à primitivação por partes, determine as seguintes primitivas:

1)

$$\int x \sin 2x \, dx$$

$$f' = \sin 2x \qquad f' = -\frac{1}{2}\cos 2x$$

$$g = x \qquad g' = 1$$

$$= -\frac{x}{2}\cos 2x - \int \cos 2x \, dx$$

$$= -\frac{x}{2}\cos 2x + \frac{1}{2}\int \cos 2x \, dx$$

$$= -\frac{x}{2}\cos 2x + \frac{1}{4}\sin 2x + C$$