

Treino para P1 - 03/09/2025

1. Calcule as integrais definidas abaixo:

$$\textcircled{1} \int_{-1}^2 x^3 e^{x^4} dx$$

$$\textcircled{2} \int_{-5}^5 \left((x^5 - 7x^3 + 18\sin(x^3))^3 + \frac{x+1}{x^2+5} \right) dx$$

$$\textcircled{3} \int_0^{\pi/4} \frac{\sin^3 \theta}{\cos \theta} d\theta$$

$$\textcircled{4} \int_0^{1/2} \frac{x^4}{\sqrt{1-x^2}} dx$$

$$\textcircled{5} \int_0^1 \frac{2x+1}{x^2+2x+2} dx$$

2. Calcule as integrais indefinidas abaixo:

$$\textcircled{1} \int \frac{x^3+49}{x^2-5x+6} dx$$

$$\textcircled{2} \int \frac{dx}{x\sqrt{1-(\ln x)^2}}$$

$$\textcircled{3} \int \frac{x^2}{(2+x^3)^4} dx$$

$$\textcircled{4} \int \arctan \sqrt{x} dx$$

$$\textcircled{5} \int \frac{x}{\sqrt{x^2+2x+2}} dx$$

3. Determine e esboce o maior domínio possível para cada uma das funções abaixo:

$$\textcircled{1} f(x, y) = \frac{\sqrt{xy}}{2\cos^2(x^2+y^2)-1}$$

$$\textcircled{2} f(x, y) = \ln(x^2y - 4y)$$

$$\textcircled{3} f(x, y) = \sqrt[4]{\frac{y^3 - x^2y}{x^5}}$$