

Cálculo B - Prova 1

Nome:

Turma:

Resolva as integrais

1. $\int dx \sin^4 x$

2. $\int dx \frac{\sec^4 x}{\sqrt{\tan x}}$

3. $\int dx \frac{1}{\sqrt{4x+x^2}}$

4. $\int dx \frac{x^2 - 3x - 7}{(2x + 3)(x + 1)^2}$

5. $\int \frac{dx}{\sin x + \tan x}$

6. $\int_{-\infty}^{\infty} dx x e^{-x^2}$

7. $\int_0^2 dx \frac{dx}{(x - 1)^{2/3}}$

Tabela de Integrais

$$\int x^n dx = \frac{x^{n+1}}{n+1} \quad (n \neq -1)$$

$$\int \frac{1}{x} dx = \ln x$$

$$\int e^x dx = e^x$$

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

$$\int \cos x dx = \sin x$$

$$\int \tan x dx = \ln |\sec x|$$

$$\int \cot x dx = -\ln |\csc x|$$

$$\int \sec x dx = \ln |\sec x + \tan x|$$

$$\int \csc x dx = \ln |\csc x - \cot x|$$

$$\int \sec^2 x dx = \tan x$$

$$\int \csc^2 x dx = -\cot x$$

$$\int \sec x \tan x dx = \sec x$$

$$\int \csc x \cot x dx = -\csc x$$

Relações teis

$$\sin mx \sin nx = \frac{1}{2} \cos(m-n)x - \frac{1}{2} \cos(m+n)x$$

$$\cos mx \cos nx = \frac{1}{2} \cos(m+n)x + \frac{1}{2} \cos(m-n)x$$

$$\sin mx \cos nx = \frac{1}{2} \sin(m-n)x + \frac{1}{2} \sin(m+n)x$$

Substituição útil: $z = \tan \frac{x}{2}$, $\sin x = \frac{2z}{1+z^2}$, $\cos x = \frac{1-z^2}{1+z^2}$