

# Fundamentos de Cálculo Aplicado

Fundamentos gerais sobre  
funções

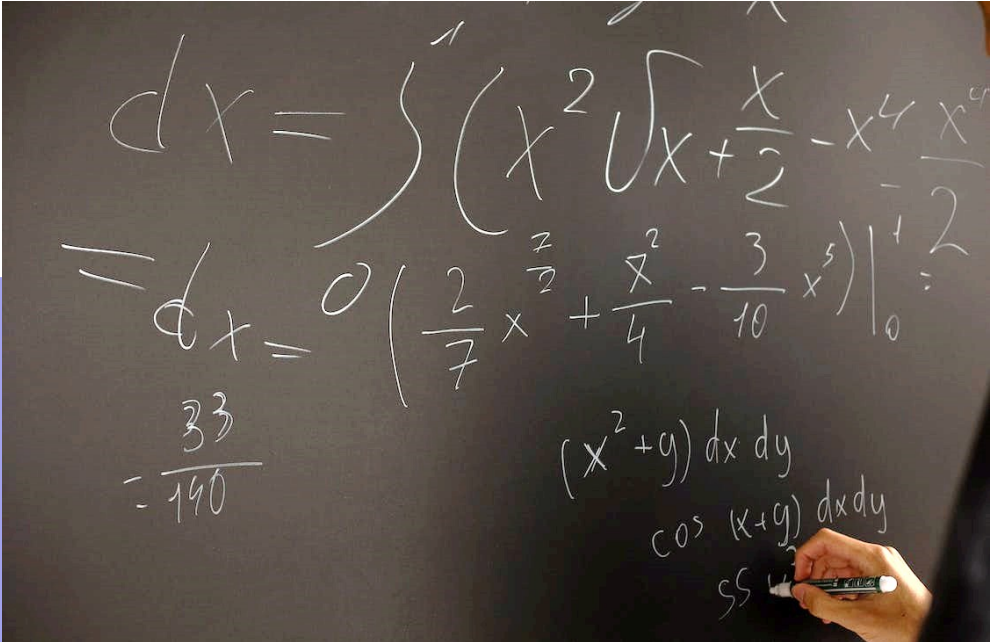
Profa. Ma. Alessandra Negrini



0  
2

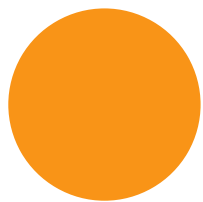
# Função exponencial

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The image shows a chalkboard with handwritten mathematical work. The top part shows the integration of  $x^2 \sqrt{x} + \frac{x}{2} - x^4 \frac{x^4}{2}$  to find  $dx$ . The middle part shows the evaluation of the integral from 0 to 2, resulting in  $\frac{33}{140}$ . The bottom part shows the integration of  $(x^2 + y) dx dy$  and  $\cos(x+y) dx dy$ .

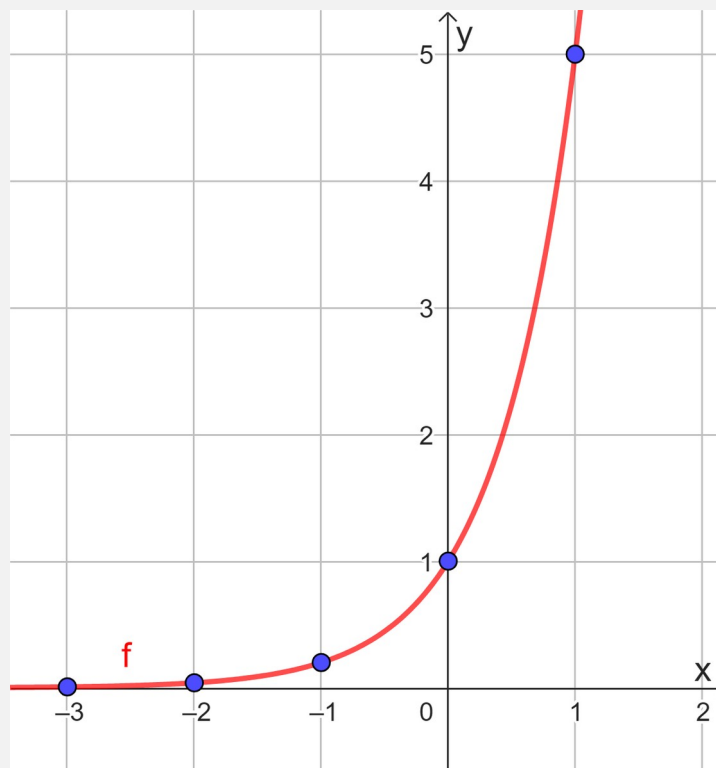
$$dx = \int \left( x^2 \sqrt{x} + \frac{x}{2} - x^4 \frac{x^4}{2} \right)$$
$$= dx = 0 \left( \frac{2}{7} x^{\frac{7}{2}} + \frac{x^2}{4} - \frac{3}{10} x^5 \right) \Big|_0^2 = \frac{33}{140}$$
$$(x^2 + y) dx dy$$
$$\cos(x+y) dx dy$$
$$ss \int_0^2$$

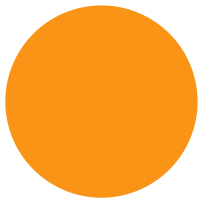


# Função exponencial

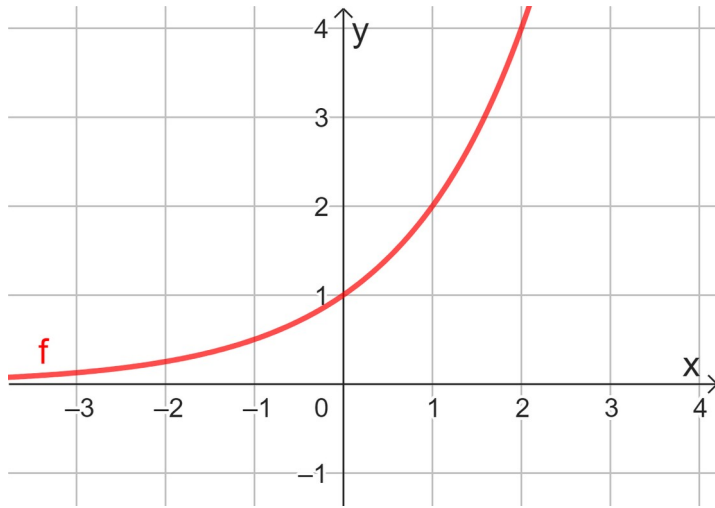
- Domínio:
- Imagem:
- Interseção com eixo : em

$$f : \mathbb{R} \rightarrow \mathbb{R}$$



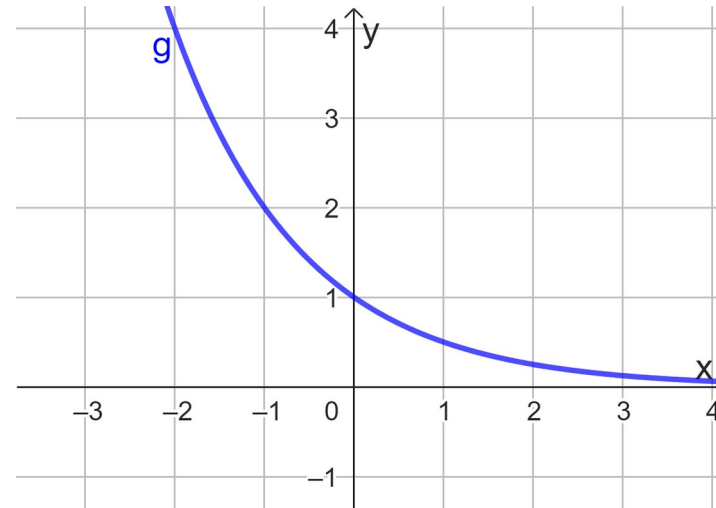


# Função exponencial e base



Crescente

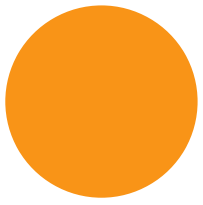
$$a > 1$$



Decrescent  
e

$$0 < a < 1$$

Crescente porque



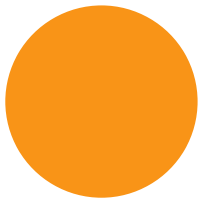
## Exemplo: meia vida

A meia vida de uma substância química é de 6 horas.

A quantidade inicial é de 1 g.

Qual é o tempo para a massa reduzir a 62,5 mg?

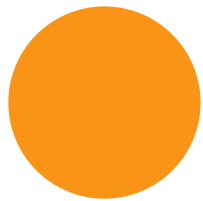




- : períodos de meia-vida
- : quantidade de substância, em g

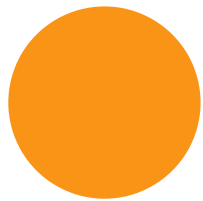
	0	1	2	3
	1			





Tempo para atingir





# Equação exponencial

- Equação em que a incógnita corresponde ao expoente de uma potência.

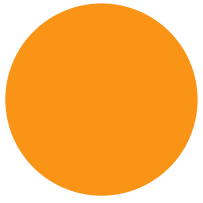
Exemplos:

- Propriedade: para  $e$  :

implica







Exemplo:

