

# Fundamentos de Cálculo Aplicado

Fundamentos gerais sobre  
funções

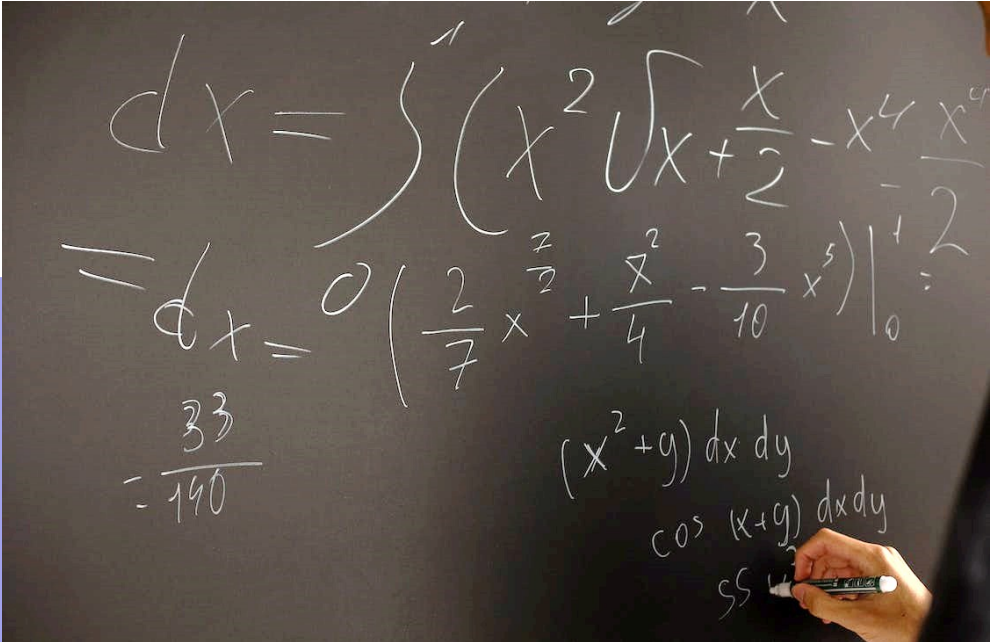
Profa. Ma. Alessandra Negrini



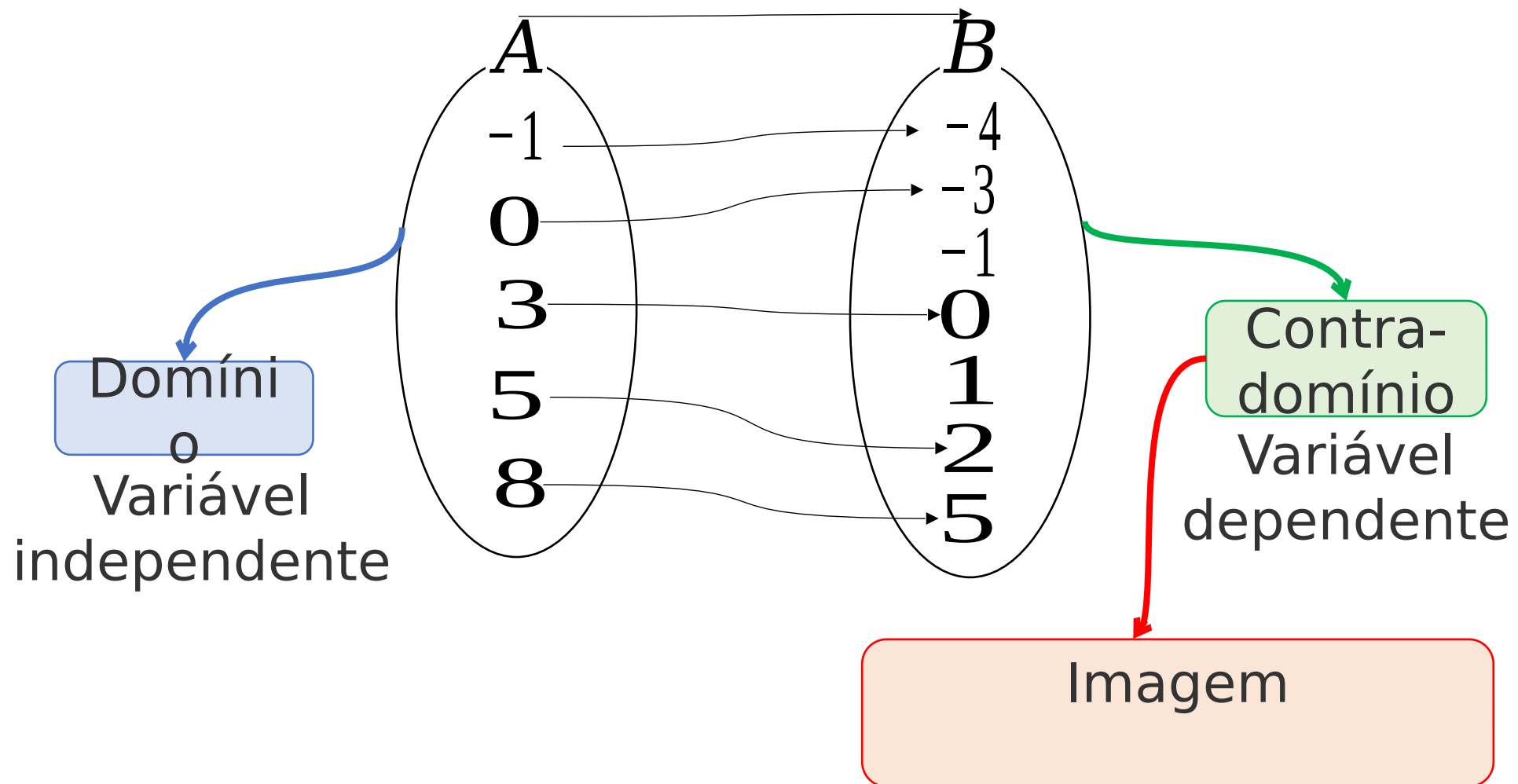
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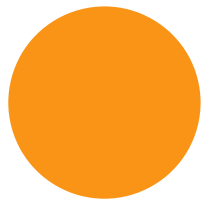
# Funções afim e quadrática

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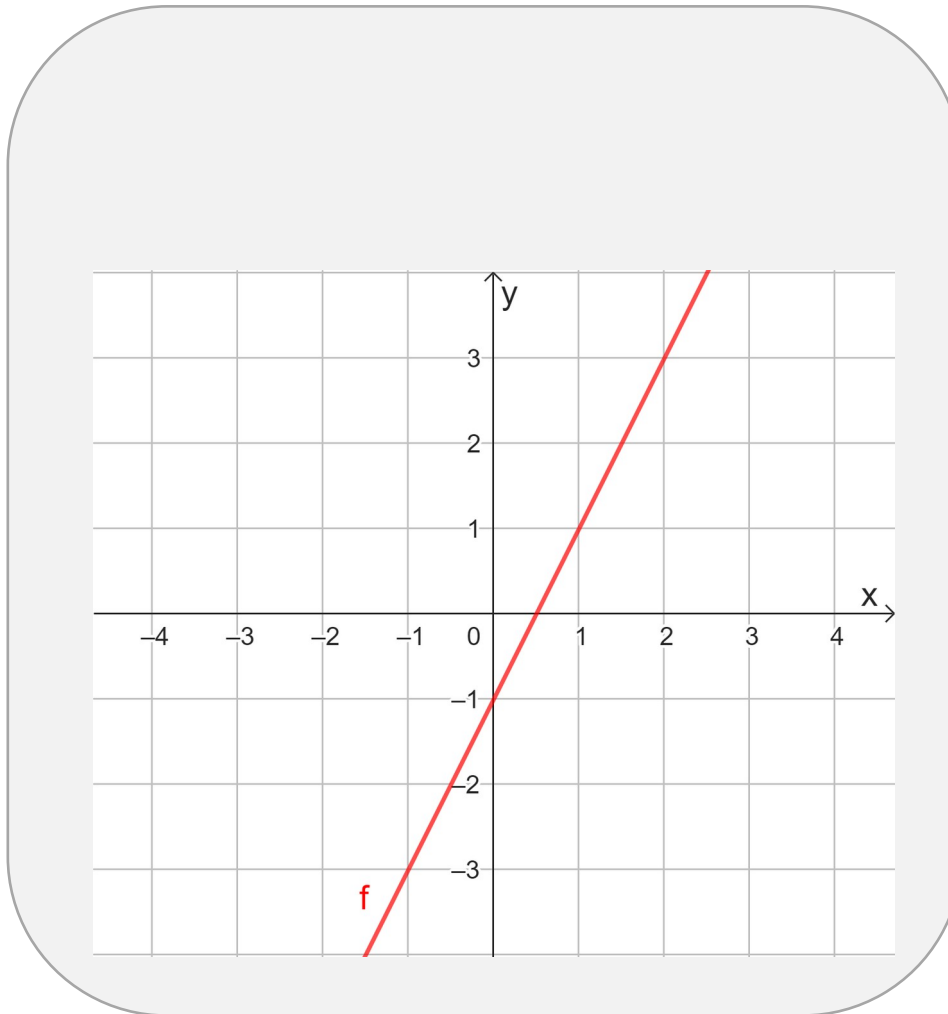
The image shows a chalkboard with handwritten mathematical work. The top line is an integral:  $dx = \int \left( x^2 \sqrt{x} + \frac{x}{2} - x^4 \frac{x^4}{2} \right)$ . The second line shows the result of the integral:  $= dx = \left( \frac{2}{7} x^{\frac{7}{2}} + \frac{x^2}{4} - \frac{3}{10} x^5 \right) \Big|_0^2$ . Below this, the value 33 is written over 140, with a minus sign:  $\frac{33}{-140}$ . To the right, there are two more expressions:  $(x^2 + y) dx dy$  and  $\cos(x+y) dx dy$ . A hand is visible at the bottom right, holding a piece of chalk.

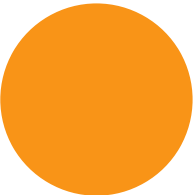

$$f$$




# Função afim

- Coeficientes:  $a$  e  $b$
- Gráfico: reta
- Zero ou raiz:  $x = -\frac{b}{a}$  para o qual  $f(x) = 0$

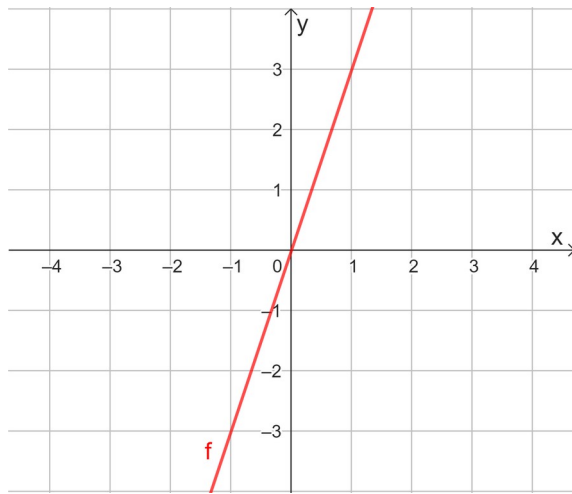




## Casos particulares

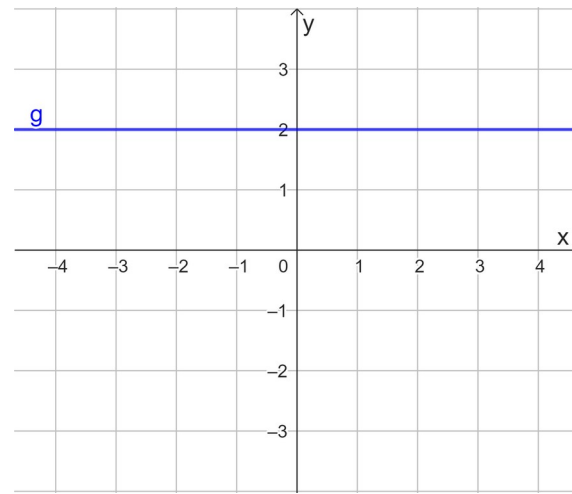
Função linear

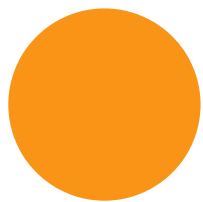
$$f(x) = ax$$



Função constante

$$f(x) = b$$





# Exemplo: plano de saúde

- Mensalidades:



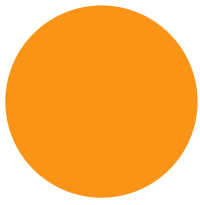
taxa fixa de R\$ 150,00, e R\$ 60,00 por consulta

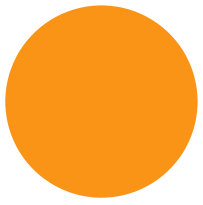


taxa fixa de R\$ 290,00, e R\$ 32,00 por consulta



Qual plano compensa mais e em quais condições?

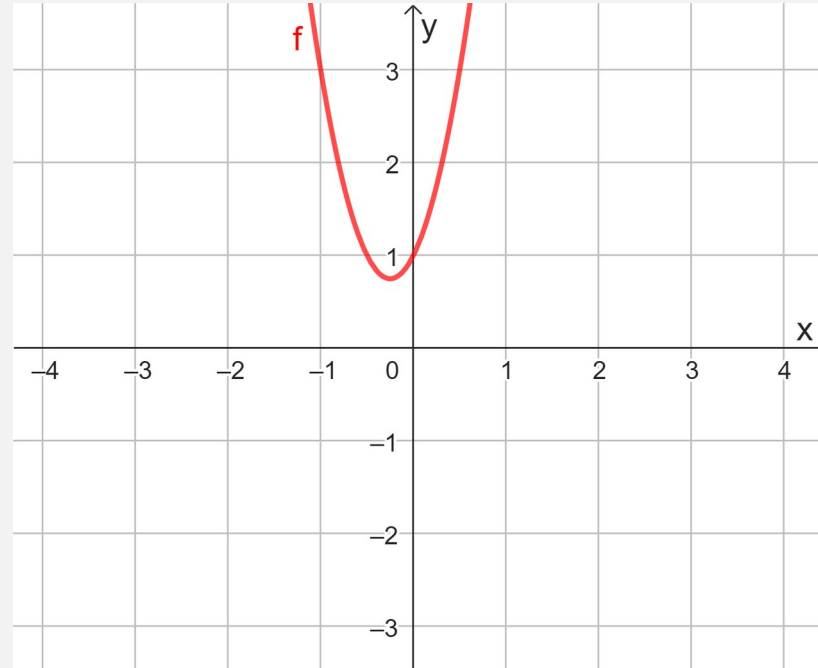




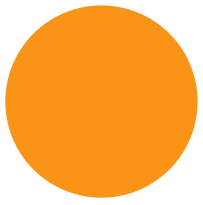
# Função quadrática

- Coeficientes: , e
- Gráfico: parábola

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





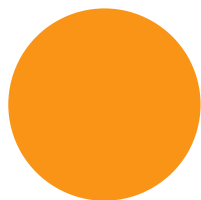


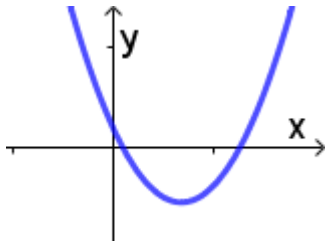
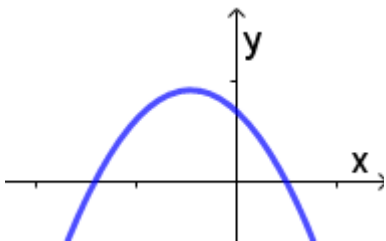
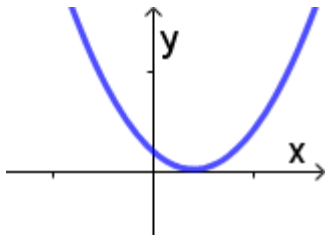
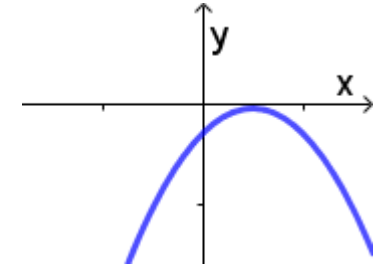
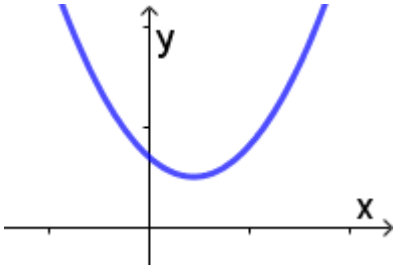
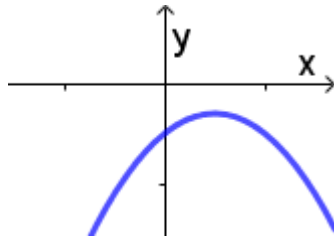
Discriminante:

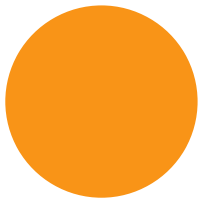
Raízes ou zeros:

Vértice:





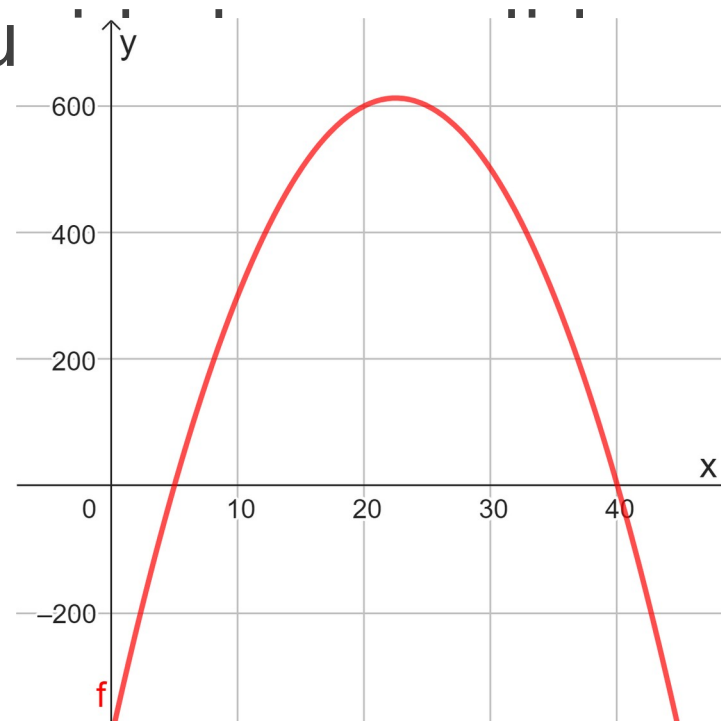
Discriminante		
		
		
		

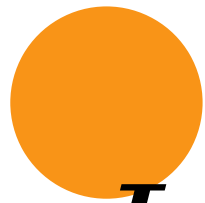


# Exemplo: função lucro

A função lucro associada a um produto é dada por:

com a quantidade de  $x$   
Qual o lucro máximo?





$$L(x) = -2x^2 + 90x - 400$$

