

Fundamentos de Cálculo Aplicado

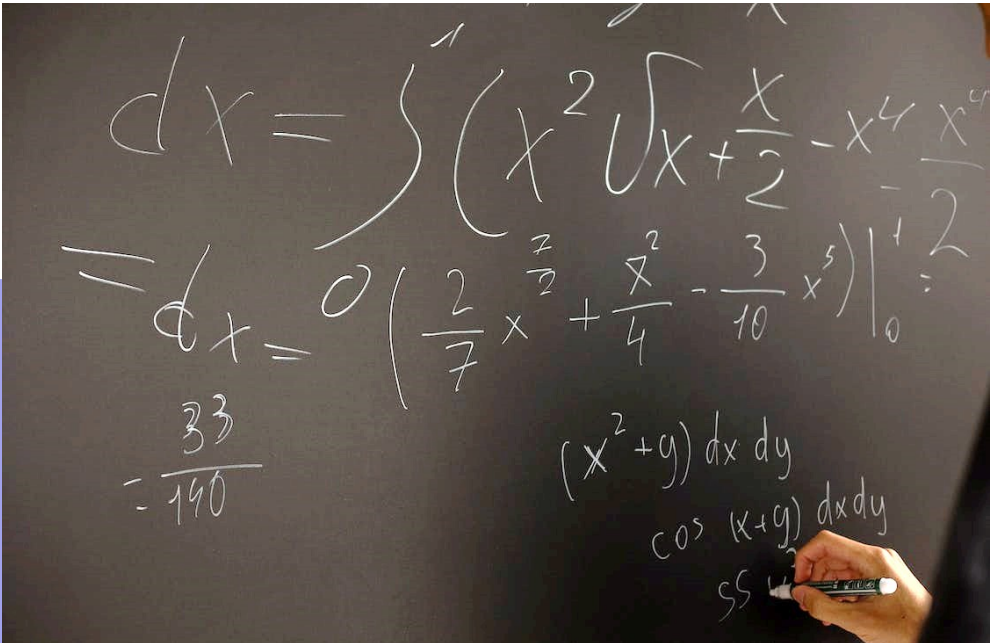
Fundamentos gerais sobre
limites e derivadas

Profa. Ma. Alessandra Negrini



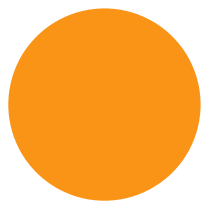
01

Introdução aos limites

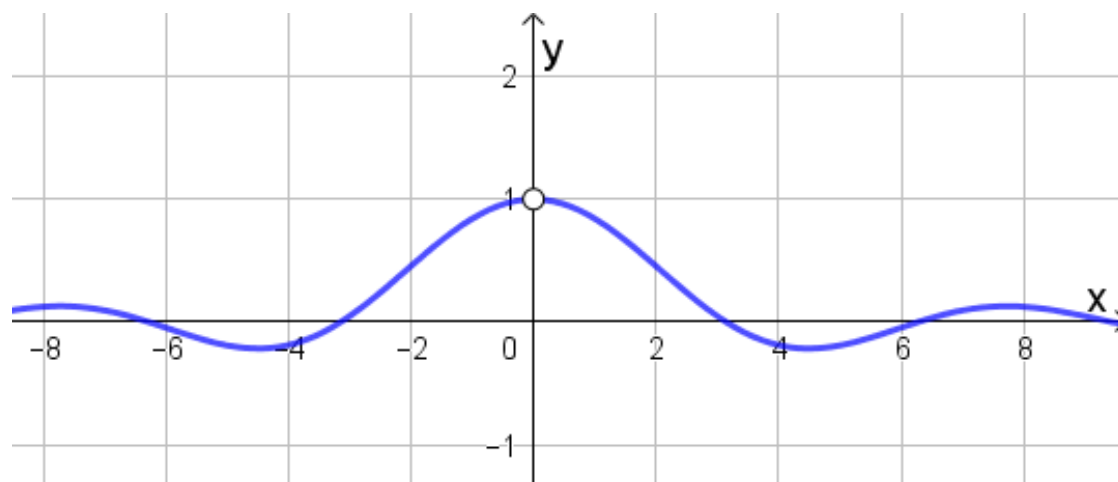


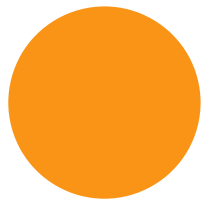
Handwritten mathematical formulas on a chalkboard:

$$dx = \int \left(x^2 \sqrt{x} + \frac{x}{2} - x^4 \frac{x^4}{2} \right)$$
$$= dx = 0 \left(\frac{2}{7} x^{\frac{7}{2}} + \frac{x^2}{4} - \frac{3}{10} x^{\frac{5}{2}} \right) \Big|_0^{\frac{1}{2}}$$
$$\frac{33}{-140}$$
$$(x^2 + y) dx dy$$
$$\cos(x+y) dx dy$$
$$ss \frac{1}{2}$$



Exemplo:



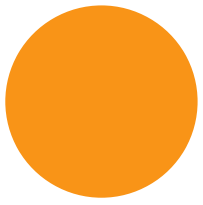


Limite de função

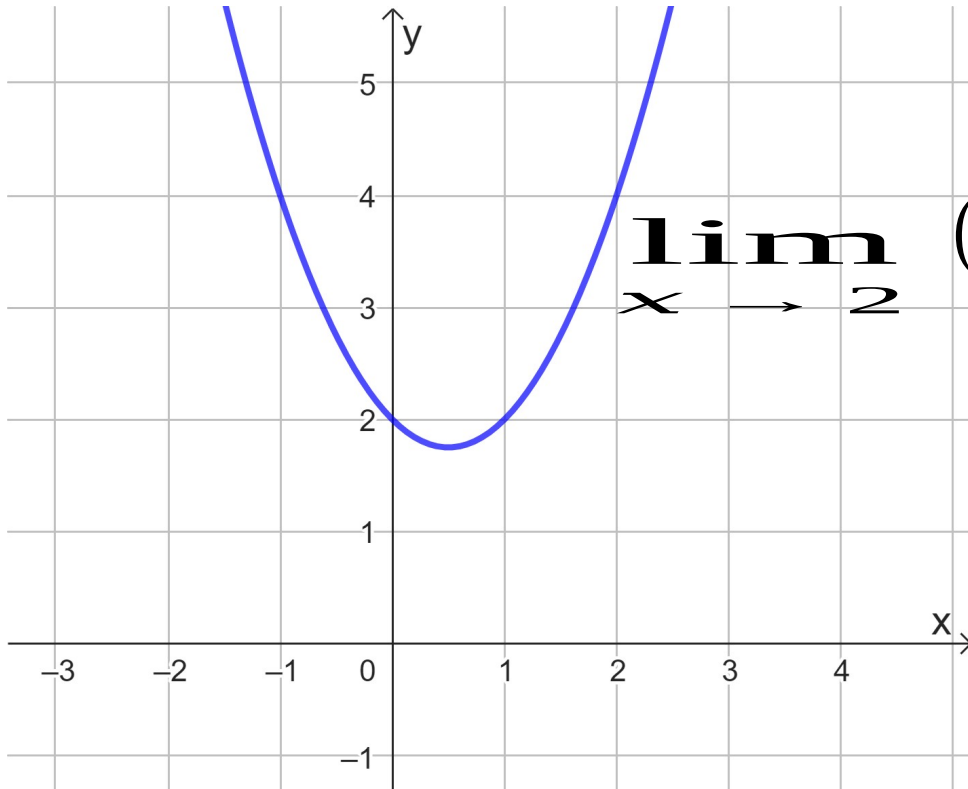
Suponha que esteja definida em algum intervalo aberto em torno de , exceto possivelmente no próprio .

Dizemos que se pudermos tornar os valores de suficientemente próximos de ao tomar suficientemente próximo de , mas não necessariamente igual a .

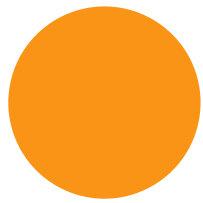




Exemplo:

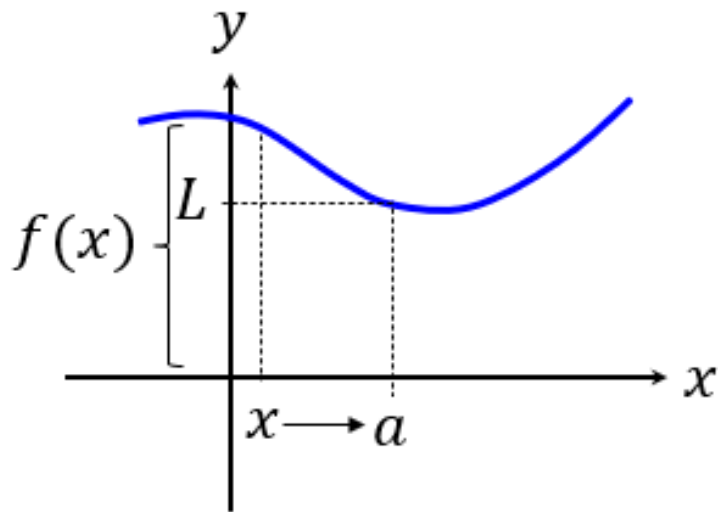


$$\lim_{x \rightarrow 2} (x^2 - x + 2) = 4$$

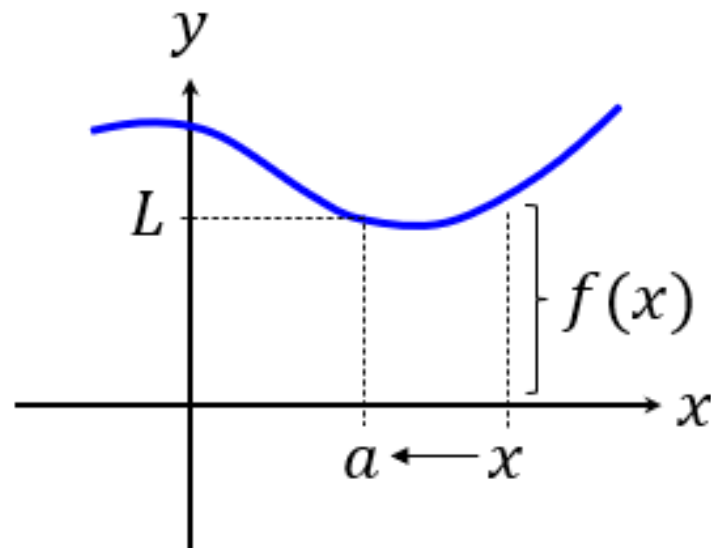


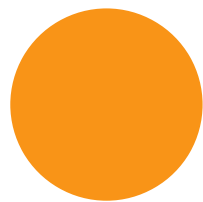
Limites laterais

Limite à esquerda:

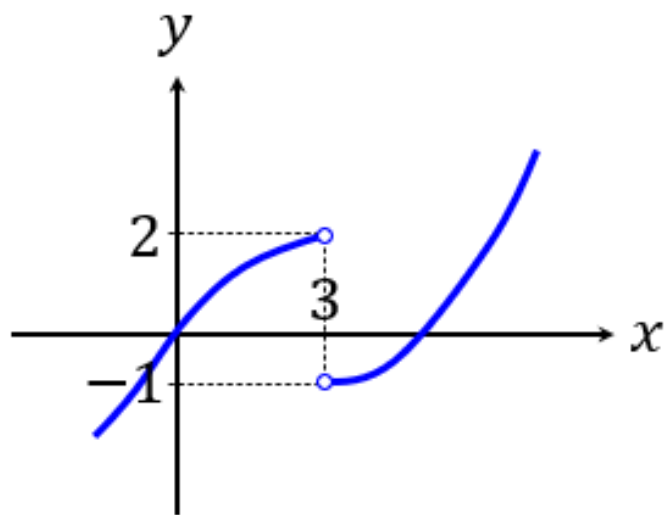


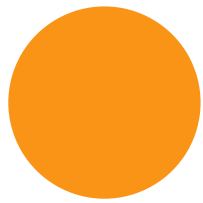
Limite à direita:





Exemplo:

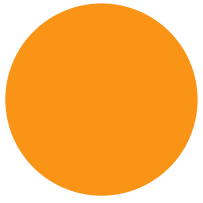




Limites laterais e bilaterais

O **limite** de , quando tende ao , existe se, e somente se, os **limites laterais** em torno de existem e são iguais, isto é,

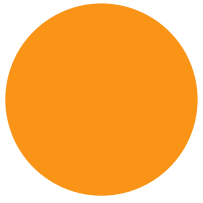




Algumas propriedades

- se
- e





Exemplo:

