1. Calcule os limites abaixo:

   (a)
   $$\lim_{x \to 1} \frac{x^2 - 1}{x - 1}$$

   (b) $\lim_{x \to 1} \frac{x^2 - 1}{x - 1}$

   (c) $\lim_{x \to 1} \frac{x^2 - 1}{x - 1}$

2. Seja a função definida por $f(x) = x^2 - \sqrt{x}$. Calcule as derivadas abaixo:

   (a) f'

   (b) f''

   (c) f'''

   (d) $f^{(iv)}$

   (e) $f^{(v)}$

   (f) $\frac{df}{dx}$

   (g) $\frac{d^2 f}{dx^2}$

   (h) $\frac{d^3 f}{dx^3}$

   (i) $\frac{d^4 f}{dx^4}$

   (j) $\frac{d^5 f}{dx^5}$

3. Seja a função definida por $f(x, y) = yx^2 - \sqrt{x} + y^3$. Calcule as derivadas abaixo:

   (a) $\frac{\partial f}{\partial x}$

   (b) $\frac{\partial^2 f}{\partial^2 x}$

   (c) $\frac{\partial^3 f}{\partial^3 y}$

   (d) $\frac{\partial^4 f}{\partial^4 x}$

   (e) $\frac{\partial^5 f}{\partial^5 y}$

   (f) $\frac{\partial f}{\partial x}\left(\frac{\partial f}{\partial y}\right)$

4. Calcule as integrais abaixo:

   (a) $\int_1^5 x^2 \cos x \, dx$

(b)

$$\int_1^5 x^2 \cos x \, dx$$

(c) $\int_1^5 x^2 \cos x \, dx$

(d) $\int_1^5 x^2 \cos x \, dx$

5. Calcule as somatórias abaixo:

(a) $\sum_{i=1}^{n} a_i$

(b) $\sum_{i=1}^{n} a_i$

(c)

$$\sum_{i=1}^{n} a_i$$