OPTIMISATION

(Tutorial)

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EXERCISE

Evaluate the derivative of the following functions

1. $f_1(x) = 7x^4 + \log(1 + x^2)$
2. $f_2(x) = x\log(x^2) - x^2\log(x)$
3. $f_3(x) = x^3e^x - xe^{-x}$
4. $f_4(x) = \sqrt{x^3}\log\sqrt{1-x}$
5. $f_5(x) = \frac{1}{\log(x^2)} - 7x(1 + e^x)$
6. $f_6(x) = 1 + x^9 - \frac{\log x}{\sqrt[3]{x}}$

EXERCISE

Evaluate the derivative of the following functions

1. $g_1(x) = (12 - 5x^7)^{13}$
2. $g_2(x) = \frac{1}{(1+8x^6)^3}$
3. $g_3(x) = \sqrt[5]{2 - e^{-x}}$
4. $g_4(x) = \log\left(\frac{1+x}{1-x}\right)$
5. $g_5(x) = e^{-x^4+x-\log x}$
6. $g_6(x) = \sqrt[6]{\log(3 - 6x^2)^3}$

EXERCISE

Evaluate the derivative of the following functions

1. $h_1(x, y) = x^4y^3 - 5x^2y^9 + 7\sqrt{x}y + \sqrt{y} + 1$
2. $h_2(x, y, z) = xyze^{xy+xz+yz}$
3. $h_3(x, y, z, w) = (1 + xyzw - x^2y^2z^2w^2)\log(1 + xy + zw)$
4. $h_4(x_1, \ldots, x_n) = \sum_{i=1}^{n} x_i^2$