Regole di Derivazione

1) $f(x) = \text{cost.}, \forall x \in A \implies f'(x) = 0 \quad , \forall x \in A$

2) $f(x) = c_1 f_1(x) + c_2 f_2(x) \implies f'(x) = c_1 f_1'(x) + c_2 f_2'(x)$

DIM.

$$\frac{f(x) - f(x_0)}{x - x_0} = c_1 \frac{f_1(x) - f_1(x_0)}{x - x_0} + c_2 \frac{f_2(x) - f_2(x_0)}{x - x_0}$$

$\square$

3) $f(x) = f_1(x) f_2(x) \implies f'(x) = f_1'(x) f_2(x) + f_1(x) f_2'(x)$

DIM.

$$\frac{f(x) - f(x_0)}{x - x_0} = \frac{f_1(x) f_2(x) - f_1(x_0) f_2(x) + f_1(x_0) f_2(x) - f_1(x_0) f_2(x_0)}{x - x_0} =$$

$$= \frac{f_1(x) - f_1(x_0)}{x - x_0} f_2(x) + f_1(x_0) \frac{f_2(x) - f_2(x_0)}{x - x_0}$$

$\square$

4) $f(x) = \dfrac{n(x)}{d(x)} ; \; d(x) \neq 0 \implies f'(x) = \dfrac{n'(x) d(x) - n(x) d'(x)}{[d(x)]^2}$

DIM.

$$f(x) - f(x_0) = \frac{n(x)}{d(x)} - \frac{n(x_0)}{d(x_0)} = \frac{n(x) d(x_0) - n(x_0) d(x_0) + n(x_0) d(x_0) - n(x_0) d(x)}{d(x)\, d(x_0)}$$

$$\frac{f(x) - f(x_0)}{x - x_0} = \frac{\dfrac{n(x) - n(x_0)}{x - x_0} d(x_0) - n(x_0) \dfrac{d(x) - d(x_0)}{x - x_0}}{d(x)\, d(x_0)}$$

$\square$