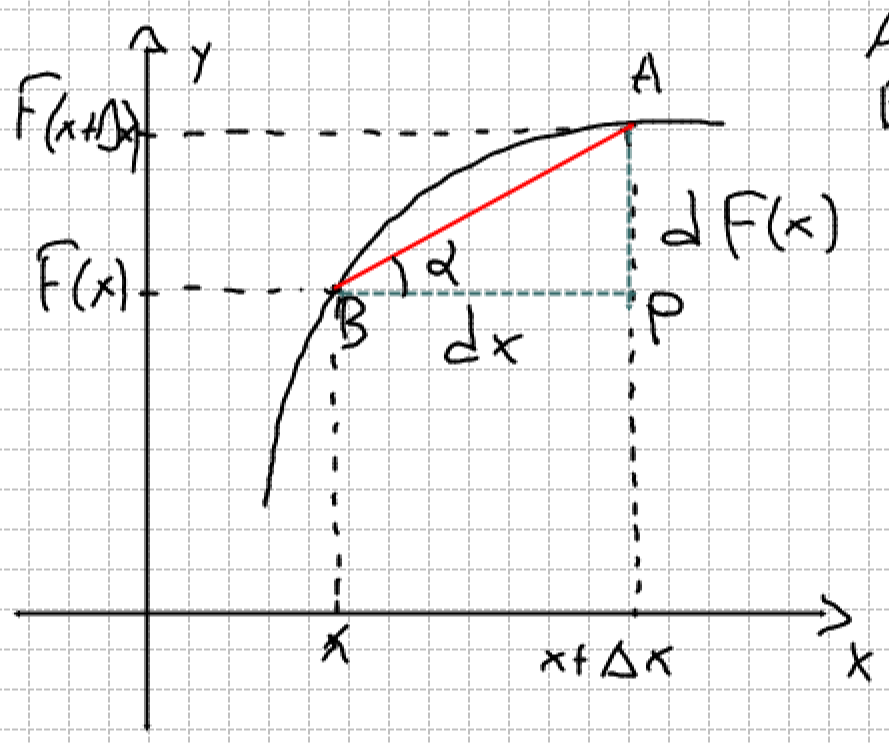
Data una funzione $F(x)$ continua e definita nell'intorno I si chiama differenziale della funzione $F(x)$:

$$dF(x) = F'(x_0)\,\Delta x$$



$AP = \operatorname{sen}\alpha \cdot AB$
$BP = \cos\alpha \cdot AB$

$$\frac{AP}{BP} = \operatorname{tg}\alpha$$

$$dF : F'(x)\cdot dx$$

es n° 407 pag 79

$$\sqrt{3{,}99} = \sqrt{\underbrace{3}_{x}+\underbrace{0{,}99}_{\Delta x}}$$

$x_0 = 3$
$\Delta x = 0{,}99$

$dF : F'(x_0)\cdot\Delta x$

$f(x) = \sqrt{x} = x^{\frac{1}{2}}$

$$F'(x) = \frac{1}{2}x^{-\frac{1}{2}} = \frac{1}{2\sqrt{x}}$$

$$dF(x) : F(x_0) + F'(x_0)\cdot\Delta x = 1{,}997$$

$$dF(x) = \sqrt{3} + \frac{1}{2\sqrt{3}}\cdot 0{,}99$$

$$\frac{F(x+\Delta x) - F(x)}{\Delta x} = F'(x)$$

$$\Downarrow$$

$$\boxed{F(x+\Delta x) = F'(x)\cdot\Delta x + F(x)}$$

$$\sqrt{3{,}99} = \sqrt{4-0{,}01}$$

$x = 4$
$\Delta x = -0{,}01$

$$F'(x) = \frac{1}{2\sqrt{x}}$$

$$dF = \sqrt{4} + \frac{1}{4}\cdot(-0{,}01) = 2 - 0{,}0025 = 1{,}9975$$

n 408 pag 79

$$\frac{1}{\sqrt{1{,}01}} = \frac{1}{\sqrt{1+0{,}01}} \Rightarrow$$

$x_0 = 1$
$\Delta x = 0{,}01$

$$f(x) = \frac{1}{\sqrt{x}}$$

$$F'(x) = -\frac{1}{2}x^{-\frac{3}{2}} = -\frac{1}{2}\frac{1}{x\sqrt{x}}$$

$$dF(x) = F(x_0) + F'(x_0)\cdot\Delta x = 1 + \left(-\frac{1}{2}\right)\cdot 0{,}01 = +0{,}995$$

ES N 409 PAG 79

$$\operatorname{sen} 30{,}1^\circ = \operatorname{sen}(30^\circ + 0{,}1^\circ)$$

$x_0 = 30^\circ$

$\Delta x = \cancel{0{,}1^\circ}\ 1{,}75 \times 10^{-3}$

$0{,}1^\circ : x = 180 : \pi$

$x = \dfrac{0{,}1 \times \pi}{180}$

$$f(x) = \operatorname{sen} x \qquad f'(x) = \cos x$$

$$df(x_0) = f(x_0) + f'(x_0)\,\Delta x =$$

$$= \operatorname{sen} 30^\circ + \cos 30^\circ \cdot 1{,}75 \times 10^{-3}$$

$$= 0{,}5015$$