



# LEZIONI DI MATEMATICA

## FUNZIONE INTEGRALE

$$F(x) = \int_a^x f(t) dt$$

CLASSE : V LICEO SCIENTIFICO - LEZIONE: N. M5038

MARCO BRAICO

$$F(x) = \int_0^x f(t) dt \quad \rightarrow \quad F'(x) = f(x) \quad \cancel{\neq}$$

$$F'(x) = \int_0^x \frac{(x^2+2) dx}{(t^2+2) dt} = \int_0^x (t^2+2) dt = x^2+2$$

$$\bullet) \quad F(x) = \int_0^x \cos t dt \Rightarrow F'(x) = \cos x$$

$\int_3^x$                        $\int_4^x$

$$f(x) = \int_0^x (t^2 - 5t + 2) dt = \left[ \frac{1}{3}t^3 - \frac{5}{2}t^2 + 2t \right]_0^x$$

$$f(x) = \left( \frac{1}{3}x^3 - \frac{5}{2}x^2 + 2x \right) - \left( \frac{1}{3} \cdot 0 - \frac{5}{2} \cdot 0 + 2 \cdot 0 \right) =$$

$$\bullet) G(x) = \int_0^{x^2} \frac{\ln t}{t} dt \rightarrow G'(x^2) \rightarrow ?$$

$$G(x) = \int_a^{f(x)} g(t) dt \Rightarrow G'(x) = g(f(x)) \cdot f'(x)$$

$$G'(x) = \frac{\ln x^2}{x^2} \cdot 2x = 2 \cdot \frac{\ln x^2}{x}$$

$$\bullet) G(x) = \int_0^{3x} (t+4) dt \Rightarrow G'(x) \Rightarrow (3x+4) \cdot 3$$

$$= 9x+12$$

$$\bullet) \underline{F'(2)} \text{ SE } F(x) = \int_{-2}^x \frac{(t+2)}{t} dt =$$

$$\frac{x+2}{x} \Rightarrow \frac{2+2}{2} = \boxed{2}$$