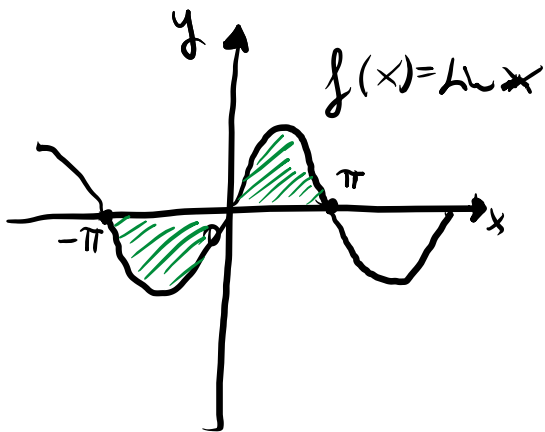
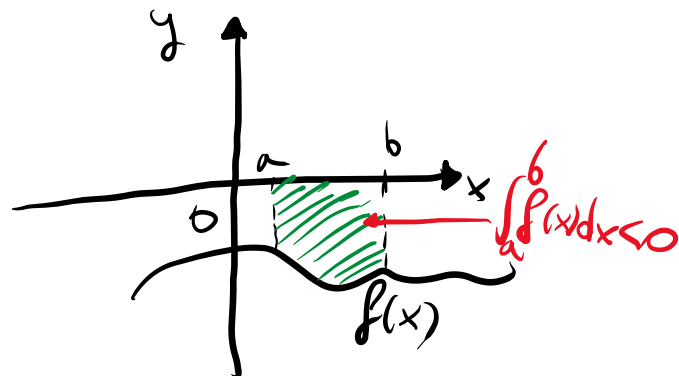
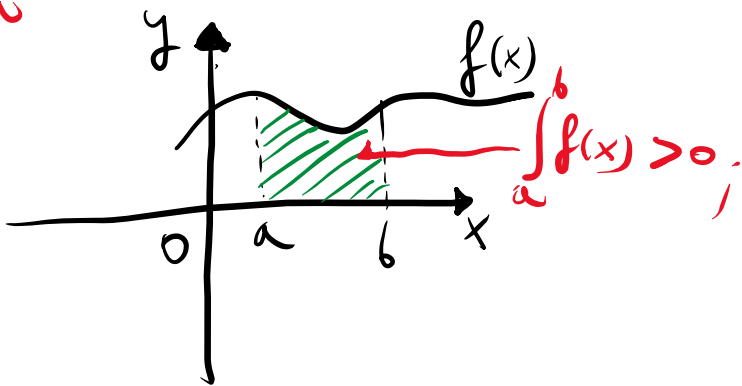


INTEGRALI

- INTEGRALI INDEFINITI:  $\int f(x) dx = F(x) + C$
- INTEGRALI DEFINITI:  $\int_a^b f(x) dx = F(b) - F(a)$

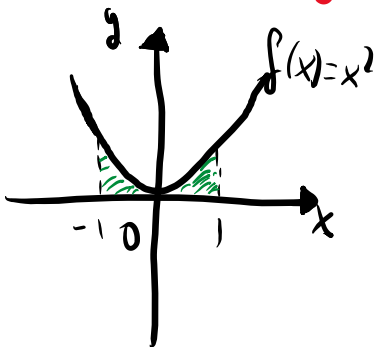
1)  $\int f(x) dx = F(x) + C$ , PER OGNI  $C \in \mathbb{R}$ , È UNA FAMIGLIA DI FUNZIONI.

2)  $\int_a^b f(x) dx = F(b) - F(a)$  È UN NUMERO, Q'È LA MISURA DELL'AREA.



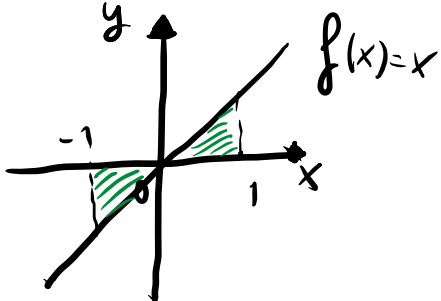
$$\int_{-\pi}^{\pi} \sin(x) dx = 0$$

1) SE  $f(x)$  È PARI,  $f(x) = f(-x) \Rightarrow \int_{-a}^a f(x) dx = 2 \int_0^a f(x) dx$ .



$$\int_{-1}^1 x^2 dx = 2 \int_0^1 x^2 dx$$

2) Se  $f(x)$  è dispari,  $f(x) = -f(-x) \Rightarrow \int_{-a}^a f(x) dx = 0$ .



$\int_{-1}^1 f(x) dx = 0$ .

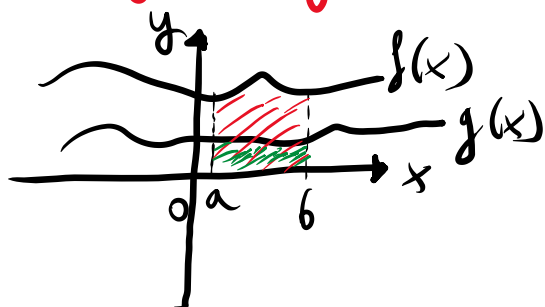
### PROPRIETÀ FONDAMENTALI DEGLI INTEGRALI

1)  $\int (f(x) \pm g(x)) dx = \int f(x) dx \pm \int g(x) dx$ ;

2)  $\int k \cdot f(x) dx = k \cdot \int f(x) dx, \forall k \in \mathbb{R}$ ;

3)  $\int f(x) \cdot g(x) dx \neq \int f(x) dx \cdot \int g(x) dx$   
NON È!

4) Se  $f(x) \geq g(x) \geq 0 \Rightarrow \int f(x) dx \geq \int g(x) dx$



5) Se  $m \leq f(x) \leq M, \text{ con } m, M \in \mathbb{R}$ ,

$m \cdot (b-a) \leq \int_a^b f(x) dx \leq M \cdot (b-a)$

RETTANGOLO PICCOLO (pointing to m)      RETTANGOLO GRANDE (pointing to M)

