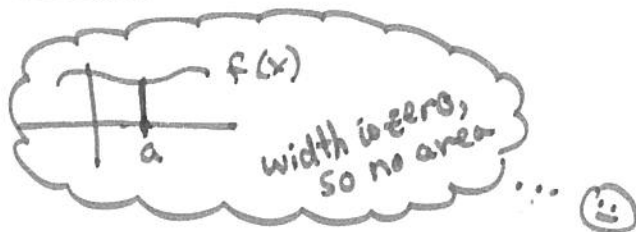
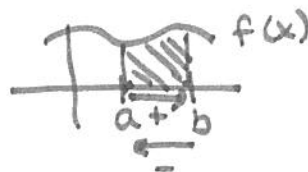


# Rules for Definite Integrals

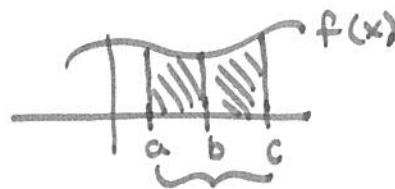
$$\int_a^a f(x) dx = 0$$



$$\int_a^b f(x) dx = - \int_b^a f(x) dx$$



$$\int_a^b f(x) dx + \int_b^c f(x) dx = \int_a^c f(x) dx$$



$$\int_a^b k f(x) dx = k \int_a^b f(x) dx$$

↑ coefficient                      ↑ variable

$$\int_a^b (f(x) \pm g(x)) dx = \int_a^b f(x) dx \pm \int_a^b g(x) dx$$

ex:  $\int_{-5}^5 f(x) dx = 14$ ,  $\int_5^8 f(x) dx = -17$ , and  $\int_{-5}^5 h(x) dx = 24$

Find:

a)  $\int_5^{-5} f(x) dx$   
 $= -\int_{-5}^5 f(x) dx$   
 $= \boxed{-14}$

b)  $\int_{-5}^5 (3f(x) - 2h(x)) dx$   
 $= 3\int_{-5}^5 f(x) dx - 2\int_{-5}^5 h(x) dx$   
 $= 3(14) - 2(24)$   
 $= 42 - 48$   
 $= \boxed{-6}$

c)  $\int_{-5}^8 f(x) dx$   
 $= \int_{-5}^5 f(x) dx + \int_5^8 f(x) dx$   
 $= 14 + (-17)$   
 $= \boxed{-3}$