We like to write equations and formulas which can be read by others:

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

$$= \begin{cases} \int_a^b f(x)\,dx, & f(x) \geq 0, \\ -\int_a^b f(x)\,dx, & f(x) \leq 0. \end{cases}$$