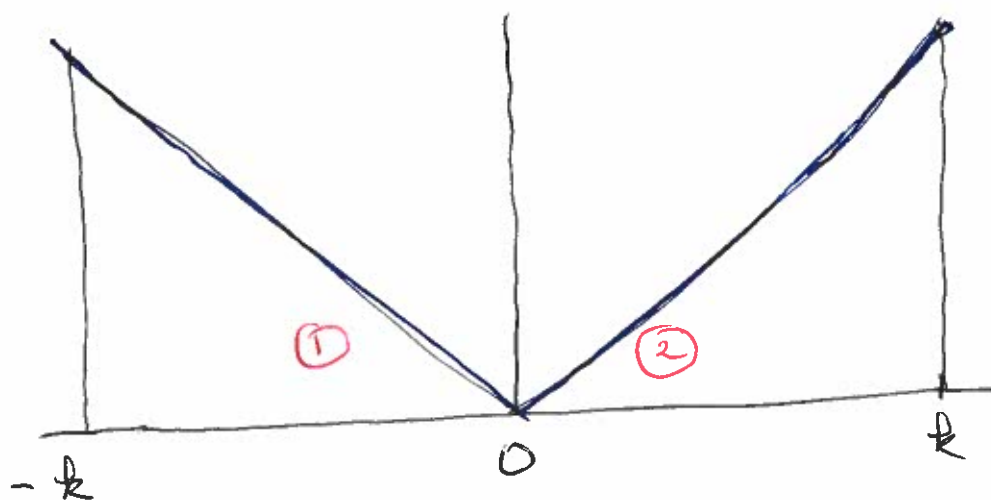


Integration of Absolute Value Functions.



$$f(x) = |x|$$

$$\int_{-k}^k |x| dx = \underbrace{\int_0^k x dx}_{\textcircled{1}} + \underbrace{\int_{-k}^0 -x dx}_{\textcircled{2}}$$

Area ① and ② are equal in size.

For simplicity integration one of the two terms above, and then double the answer.

N.B : must justify this in EXAM.

Short description, one or two lines, will suffice.