Question: -

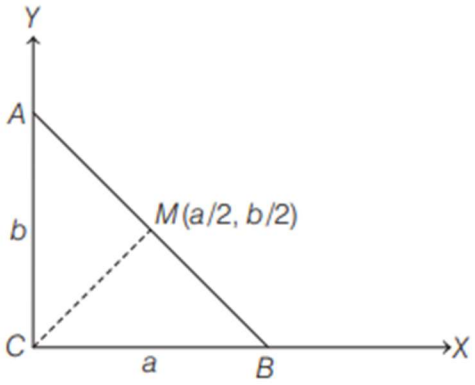
In a ΔABC, let $\angle C = \pi / 2$. If r is the inradius and R is the circumradius of the triangle, then $2(r + R)$ is equal to **(2000, 2M)**

(a) $a + b$ (b) $b + c$ (c) $c + a$ (d) $a + b + c$

Solution: -

Here, $R^2 = MC^2 = \frac{1}{4}(a^2 + b^2)$ [by distance from origin]

$= \frac{1}{4}c^2$ [by Pythagoras theorem]



$\Rightarrow \quad R = \frac{c}{2}$

Next, $r = (s - c)\tan(C/2) = (s - c)\tan \pi/4 = s - c$

$\therefore \quad 2(r + R) = 2r + 2R = 2s - 2c + c$

$= a + b + c - c$

$= a + b$