1.80
6

א. O מרכז המעגל החסום – מפגש חוצי הזוויות במשולש ABC

$\measuredangle OAC = \alpha = \measuredangle EAO$

$\measuredangle ABD = \beta = \measuredangle DBC$

(נשענות על DC) $\measuredangle DAC = \measuredangle DBC = \beta$

$\left.\begin{array}{l} \measuredangle OAD = \measuredangle OAC + \measuredangle CAD = \alpha + \beta \\ \measuredangle AOD = \measuredangle ABO + \measuredangle BAO = \alpha + \beta \end{array}\right\} AD = OD$

(חוצינות ל $\triangle ABO$)

ב. $\measuredangle AFD = \measuredangle ABD = \beta$ (נשענות על AD)

$\measuredangle BEO = 90^\circ = \measuredangle FAD$

$\Downarrow$

$\triangle BEO \sim \triangle FAD$

$\Downarrow$

$BO \cdot AD = OE \cdot FD \leftarrow \frac{BO}{FD} = \frac{OE}{AD}$

ג. מסעופים בדומים $OE \cdot FD = BO \cdot AD = BO \cdot OD = MO \cdot ON$

$\Downarrow$

מספר המותרים

ד. מסעיף ג'

$MO \cdot ON = (R-l)(R+l) = R^2 - l^2$

$\downarrow$

$\left.\begin{array}{l} MO = 2R - ON = 2R - (R+l) = R - l \\ OE \cdot FD = r \cdot 2R \end{array}\right\} 2Rr = R^2 - l^2$