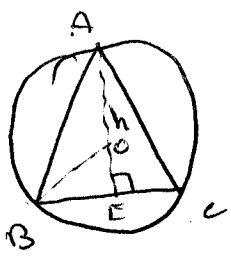


20



0 - f B קו רדיוס

$BO = R$   
 $OE = h - R$

$BO^2 = OE^2 + BE^2$   
 $R^2 = (h - R)^2 + BE^2$   
 $R^2 = h^2 - 2hR + R^2 + BE^2$   
 $BE^2 = 2hR - h^2$

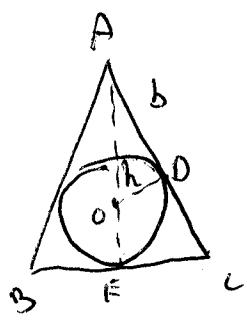
$\therefore \triangle BOE$

$BE = \sqrt{2hR - h^2} \rightarrow BC = 2\sqrt{2hR - h^2}$

$AB^2 = AE^2 + BE^2$   
 $AB^2 = h^2 + 2hR - h^2 = 2hR$   
 $AB = \sqrt{2hR} = AC$

$\therefore \triangle ABE$

21



0 פה 0 נקודה

$AO = h - r$   
 $OD = r$   
 $AD = b$

$(h - r)^2 = r^2 + b^2$   
 $h^2 - 2hr + r^2 = r^2 + b^2$   
 $2hr = h^2 - b^2$   
 $r = \frac{h^2 - b^2}{2h}$

$\therefore \triangle AOD$

(2) 2 נקודות נגוע (2)  $DC = EC = x$ ,  $EC = x$  נמוך

$AC^2 = AE^2 + EC^2$   
 $(b + x)^2 = h^2 + x^2$   
 $b^2 + 2bx + x^2 = h^2 + x^2$   
 $2bx = h^2 - b^2 \rightarrow x = \frac{h^2 - b^2}{2b}$

$\therefore \triangle AEC$

$\rightarrow BC = 2x = \frac{h^2 - b^2}{b}$

22

(1)  $AO_2 = AO_1$   
 (2)  $AO_3 = AO_3$

נמוך

(1)

$O_2O_3 = R + r = O_1O_3$

$\angle O_1AO_3 \cong \angle O_2AO_3 \Rightarrow \angle A_1 = \angle A_2 = 90^\circ$

(2)  $AO_3$  נמוך  $AO_3$   $BC$   $AE$   $AO_3$   $AE = O_2C = R$

$AO_3 = AE - r = R - r \leftarrow AE = O_2C = R \leftarrow (90^\circ \text{ ו-} 4) \text{ נמוך}$

$(O_3O_2)^2 = AO_3^2 + AO_2^2$

$\therefore \triangle AO_3O_2$

$(R + r)^2 = R^2 + (R - r)^2$   
 $R^2 + 2Rr + r^2 = R^2 + R^2 - 2Rr + r^2 \Rightarrow 4Rr = R^2 \Rightarrow r = \frac{R^2}{4R} = \frac{R}{4}$