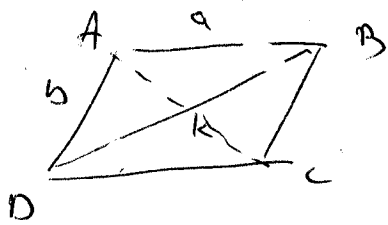


34



$\cos x_A$ (לפי חוק קוסנוס)

$$k^2 = a^2 + b^2 - 2ab \cos x_A$$

$$\cos x_A = \frac{k^2 - a^2 - b^2}{-2ab}$$

$$| \cos x_D |^2 = b^2 + a^2 - 2ab \cdot \cos x_D$$

$$x_D = 180 - x_A$$

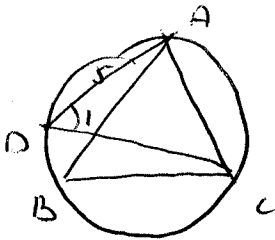
$$\cos x_D = \cos(180 - x_A) = -\cos x_A = \frac{k^2 - a^2 - b^2}{2ab}$$

$$| \cos x_D |^2 = b^2 + a^2 - 2ab \cdot \left(\frac{k^2 - a^2 - b^2}{2ab} \right) = b^2 + a^2 - k^2 + a^2 + b^2$$

$$= 2b^2 + 2a^2 - k^2$$

$$| \cos x_D | = \sqrt{2b^2 + 2a^2 - k^2}$$

3



(לפי חוק חצי קוטר) $x_D = x_B = 60$

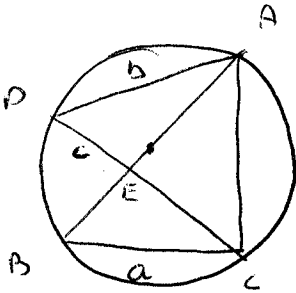
$$AC^2 = r^2 + r^2 - 2 \cdot r \cdot r \cdot \cos 60 = 4r^2$$

$$AC = 2r$$

$$2r = \frac{AC}{\sin x_D} = \frac{2r}{\sin 60}$$

$$R = \frac{r}{2 \sin 60} = 4.04$$

11



(לפי חוק חצי קוטר) $x_C = 90$

$$\frac{a}{AB} = \cos x_B, \quad AB = 2R$$

$$\cos x_B = \frac{a}{2R}$$

$x_B = x_D$ (לפי חוק חצי קוטר)

$$AE^2 = b^2 + c^2 - 2bc \cdot \cos x_D$$

$$AE^2 = b^2 + c^2 - 2bc \cdot \cos x_B = b^2 + c^2 - 2bc \cdot \frac{a}{2R} = b^2 + c^2 - \frac{bca}{R}$$

$$AE = \sqrt{b^2 + c^2 - \frac{bca}{R}}$$