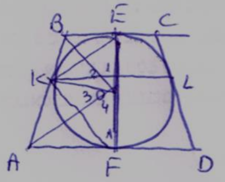
4.25
3



א.

$\measuredangle B = 2\alpha$

(3.3.3) $\triangle BEO \cong \triangle BKO$

$\measuredangle O_1 = \measuredangle O_2 = 90 - \alpha$

$\measuredangle A = 2\beta$

(3.3.3) $\triangle AKO \cong \triangle AFO$

$\measuredangle O_3 = \measuredangle O_4 = 90 - \beta$

$180 = \measuredangle A + \measuredangle B = 2\alpha + 2\beta$

$\measuredangle O_1 + \measuredangle O_2 + \measuredangle O_3 + \measuredangle O_4 = 360 - 2\alpha - 2\beta$
$= 360 - (2\alpha + 2\beta) = 180$

$\Leftarrow$ EOF קו ישר

$90 = 180 - (\alpha + \beta) = \measuredangle O_2 + \measuredangle O_3 \Leftarrow$

ב.

1) (נשענת על קוטר) $\measuredangle EKF = 90^\circ = \measuredangle BOA$

2) (משיקים היוצאים מנק אחת) $AK = AF \Rightarrow \measuredangle F_1 = 90 - \measuredangle AFK = 90 - (90 - \beta) = \beta$

$\measuredangle BAO = \beta$

$\Rightarrow \triangle AOB \sim \triangle FKE$ (S.S) $\Rightarrow \frac{S_{\triangle AOB}}{S_{\triangle KEF}} = \left(\frac{AB}{EF}\right)^2$ יחס השטחים שווה ליחס הדמיון בריבוע

ג.

טרפז חוסם מעגל $AB + CD = BC + AD$

$S_{ABCD} = \frac{(AB + BC)EF}{2} = \frac{(AB + CD)10}{2} = 10AB$

מסעיף ב

$$\left(\frac{AB}{EF}\right)^2 = \frac{S_{AOB}}{S_{KEF}} = \left(\frac{\frac{AB \cdot 5}{\cancel{2}}}{\frac{EF \cdot 4}{\cancel{2}}}\right)$$

$$\frac{AB^{\cancel{2}}}{10^2} = \frac{5\cancel{AB}}{4 \cdot \cancel{10}} \to AB = \frac{50}{4}$$

$$S_{ABCD} = 10AB = \frac{500}{4} = 125$$