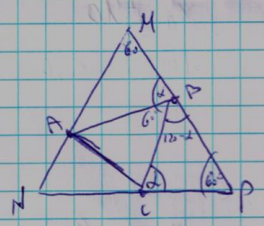
2.59
6

(א)



$AB = a$

$\triangle BCP$

$$\frac{BC}{\sin 60} = \frac{BP}{\sin\alpha}$$

$$BP = \frac{a\sin\alpha}{\frac{\sqrt{3}}{2}} = \frac{2a\sin\alpha}{\sqrt{3}}$$

$\triangle AMB$

$$\frac{AB}{\sin 60} = \frac{MB}{\sin(120-\alpha)}$$

$$MB = \frac{a\sin(120-\alpha)}{\frac{\sqrt{3}}{2}} = \frac{2a\sin(120-\alpha)}{\sqrt{3}}$$

$$MP = MB + BP = \frac{2a\sin(120-\alpha)}{\sqrt{3}} + \frac{2a\sin\alpha}{\sqrt{3}}$$

$$= \frac{2a}{\sqrt{3}}\left[\sin(120-\alpha) + \sin\alpha\right] = \frac{2a}{\sqrt{3}}\left[2\sin 60 \cdot \cos(60-\alpha)\right] = 2a\cos(60-\alpha)$$

(ב) יחס השטחים שווה ליחס הדמיון בריבוע ולכן יחס הצלעות שווה $\sqrt{2}$

$$\sqrt{2} = \frac{2\cancel{a}(\cos(60-\alpha))}{\cancel{a}} \rightarrow \frac{\sqrt{2}}{2} = \cos(60-\alpha)$$

$60-\alpha = 45 + 360°k$ $\qquad$ $60-\alpha = -45 + 360°k$

$\boxed{\alpha = 15}$ $\qquad$ $\boxed{\alpha = 105°}$