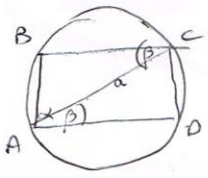
2.85
6



(a)

$$S = S_{\triangle ABC} + S_{\triangle ACD} =$$

$$= \frac{a^2 \sin\beta \sin(\alpha-\beta)}{2\sin\alpha} + \frac{a^2 \sin\beta \sin(\beta+\alpha)}{2\sin\alpha}$$

$$= \frac{a^2 \sin\beta}{2\sin\alpha}\left[\sin(\alpha-\beta) + \sin(\alpha+\beta)\right] =$$

$$= \frac{a^2 \sin\beta}{2\sin\alpha} 2\sin\alpha\cos\beta = a^2 \sin\beta\cos\beta =$$

$$= \frac{1}{2} a^2 \sin 2\beta$$

(b)

$\triangle ABC$ $\quad \frac{AC}{\sin(180-\alpha)} = 2R \longrightarrow \boxed{R = \frac{a}{2\sin\alpha}}$

$$S_{\text{круг}} = \pi R^2 = \frac{\pi a^2}{4\sin^2\alpha}$$

$$\frac{S_{\text{круг}}}{S_{\text{сегм}}} = \frac{\frac{\pi a^2}{4\sin^2\alpha}}{\frac{a^2 \sin 2\beta}{2}} = \frac{2\pi}{4\sin^2\alpha \sin 2\beta} = \frac{\pi}{2\sin^2\alpha \sin 2\beta}$$