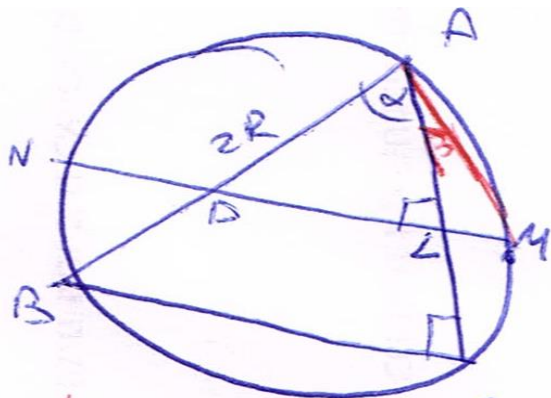
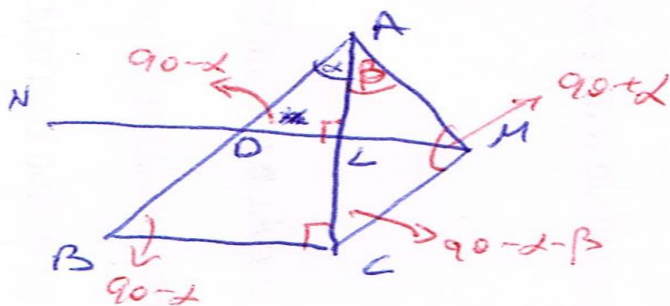


4.27
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Сфера радиуса R и диаметра $2R$

$$AC = 2R \cos \alpha$$



$$\Delta ACM: \frac{AC}{\sin(90+\alpha)} = \frac{AM}{\sin(90-\alpha-\beta)} \rightarrow AM = \frac{2R \cos \alpha \cos(\alpha+\beta)}{\cos \alpha}$$

$$\Delta ADM: \frac{DM}{\sin(\alpha+\beta)} = \frac{AM}{\sin(90-\alpha)} \rightarrow DM = \frac{2R \cos \alpha \cos(\alpha+\beta) \sin(\alpha+\beta)}{\cos \alpha}$$

$$F = DM = \frac{2R \sin(2\alpha+2\beta)}{\cos \alpha} \rightarrow F' = \frac{2R \cos(2\alpha+2\beta)}{\cos \alpha}$$

$$0 = \cos(2\alpha+2\beta)$$

$$\frac{\pi}{2} + \pi k = 2\alpha + 2\beta$$

$$\beta = \frac{\pi}{4} - \alpha + \frac{\pi}{2} k$$

$$\beta = \frac{\pi}{4} - \alpha$$

