



In the diagram below, A, B and C are three points in the same horizontal plane. D is vertically above B and E is vertically above C. The angle of elevation of E from D is  $\vartheta$ . F is a point on EC such that  $DF \parallel BC$ .

$\hat{BAC} = \alpha$ ,  $\hat{ACB} = \beta$  and  $AC = b$  meters.

Prove that  $DE = \frac{b \sin \alpha}{\sin(\alpha + \beta) \cos \vartheta}$

Calculate  $DE$  if  $b = 2\,000$  meters,  
 $\alpha = 43^\circ$ ,  $\beta = 36^\circ$  and  $\vartheta = 27^\circ$

