Problem solving with sin/cos rule

Example

The diagram shows the locations of four mobile phone masts in a field, $BC=75 m$. $CD=80m$, angle $BCD=55°$ and angle $ADC=140°$.

In order that the masts do not interfere with each other, they must be at least 70m apart.

Given that $A$ is the minimum distance from $D$, find:

1. The distance $A$ is from $B$
2. The angle $BAD$
3. The area enclosed by the four masts.

Using the sine rule twice:

Test your understanding



1. 

Extension

1. [AEA 2009 Q5a] The sides of the triangle $ABC$ have lengths $BC=a, AC=b$ and $AB=c$, where $a<b<c$. The sizes of the angles $A, B$ and $C$ form an arithmetic sequence.
2. Show that the area of triangle $ABC$ is $ac\frac{\sqrt{3}}{4}$.

Given that $a=2$ and $\sin(A)=\frac{\sqrt{15}}{5}$, find

(ii) the value of $b$,

(iii) the value of $c$.

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