

## STEP II, 1999, Q5

- 5 Show that if  $\alpha$  is a solution of the equation

$$5\cos x + 12\sin x = 7,$$

then either

$$\cos\alpha = \frac{35 - 12\sqrt{120}}{169}$$

or  $\cos\alpha$  has one other value which you should find.

Prove carefully that if  $\pi/2 < \alpha < \pi$ , then  $\alpha < 3\pi/4$ .



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