



Air maths tuition

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Minimum value using $R\cos(x-a)$ | Past Paper Question | C3 Edexcel June 2013 Q8(b)

You may assume that V is given by the formula $V = \frac{21}{24\sin\theta + 7\cos\theta}$, $0 < \theta < 150^\circ$

- (a) Express $24\sin\theta + 7\cos\theta$ in the form $R\cos(\theta - \alpha)$, where R and α are constants and where $R > 0$ and $0 < \alpha < 90^\circ$, giving the value of α to 2 decimal places. (3)

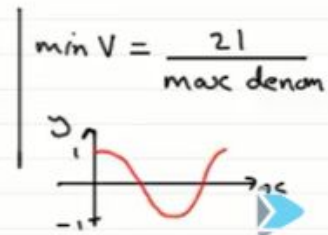
$$24\sin\theta + 7\cos\theta \equiv 25\cos(\theta - 73.74)^\circ$$

Given that θ varies,

- (b) find the minimum value of V . (2)

$$V = \frac{21}{25\cos(\theta - 73.74)^\circ}$$

$$\therefore \min V = \frac{21}{25}$$



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