Trigonometry Calculator A/B Grade

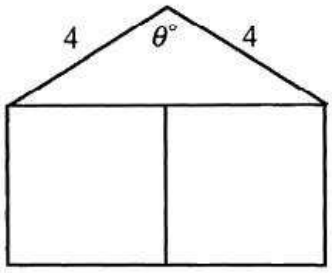
[SQA] 1. Solve the equation $3\cos 2x^\circ + \cos x^\circ = -1$ in the interval $0 \leq x \leq 360$. **5**

[SQA] 2. Solve the equation $\cos 2x^\circ + 5\cos x^\circ - 2 = 0$, $0 \leq x < 360$. **5**

[SQA] 3. Solve the equation $\cos 2x^\circ + \cos x^\circ = 0$, $0 \leq x < 360$. **5**

4. Solve $2\cos 2x - 5\cos x - 4 = 0$ for $0 \leq x < 2\pi$. **5**

[SQA] 5. A builder has obtained a large supply of 4 metre rafters. He wishes to use them to build some holiday chalets. The planning department insists that the gable end of each chalet should be in the form of an isosceles triangle surmounting two squares, as shown in the diagram.



(a) If $\theta°$ is the angle shown in the diagram and A is the area (in square metres) of the gable end , show that $A = 8\left(2 + \sin\theta^\circ - 2\cos\theta^\circ\right)$. **(5)**

(b) Express $8\sin\theta^\circ - 16\cos\theta^\circ$ in the form $k\sin(\theta - \alpha)^\circ$. **(4)**

(c) Find algebraically the value of θ for which the area of the gable end is 30 square metres. **(4)**

[END OF QUESTIONS]