

Question 4

(25 marks)

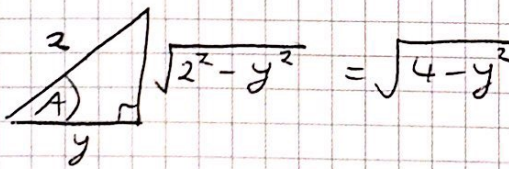
- (a) Find all the values of x for which $\cos(2x) = -\frac{\sqrt{3}}{2}$, where $0^\circ \leq x \leq 360^\circ$.

ref angle = 30°

$\begin{array}{c|c} \sqrt{3} & A \\ \hline 1 & C \end{array} \Rightarrow$
 $\begin{array}{l} 2x = 150^\circ, 210^\circ \\ \text{or} \\ 2x = 510^\circ, 570^\circ \end{array}$

$\therefore x = 75^\circ, 105^\circ, 255^\circ, 285^\circ$

- (b) Let $\cos A = \frac{y}{2}$, where $0^\circ < A < 90^\circ$. Write $\sin(2A)$ in terms of y .



$\sin 2A = 2 \sin A \cos A$
 $= 2 \cdot \frac{\sqrt{4-y^2}}{2} \cdot \frac{y}{2} = \frac{y\sqrt{4-y^2}}{2}$