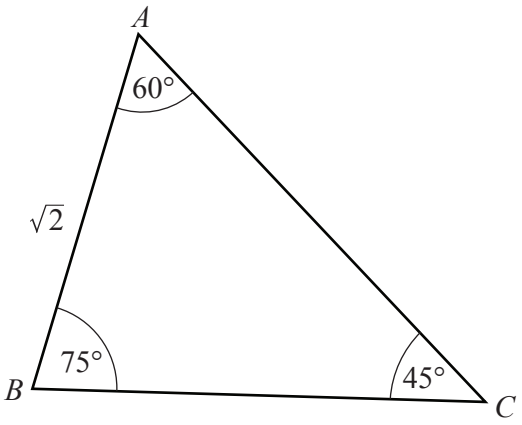
7 DO NOT USE A CALCULATOR IN THIS QUESTION.



You may use the following trigonometrical ratios.

$\sin 60° = \frac{\sqrt{3}}{2}$, $\sin 45° = \frac{\sqrt{2}}{2}$

$\cos 60° = \frac{1}{2}$, $\cos 45° = \frac{\sqrt{2}}{2}$

$\tan 60° = \sqrt{3}$, $\tan 45° = 1$

(a) Given that the area of triangle ABC is $\frac{3+\sqrt{3}}{4}$, show that $\sin 75° = \frac{\sqrt{6}+\sqrt{2}}{4}$. [5]

(b) Hence find the exact length of AC. [2]

8 **(a)** Show that $\dfrac{\sin x}{\tan x - 1} - \dfrac{\cos x}{\tan x + 1} = \dfrac{\cos x}{\sin^2 x - \cos^2 x}$. [5]

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