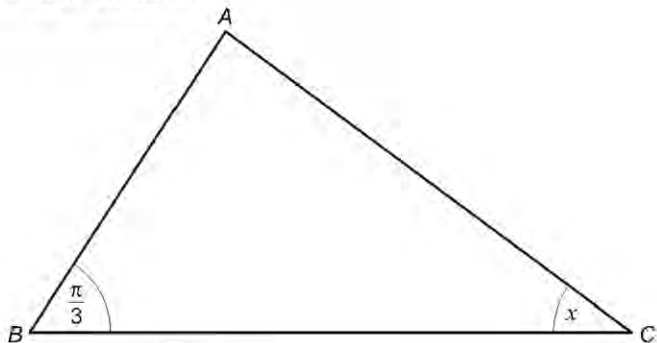


16

The triangle ABC is shown in the diagram below.

The angle ABC is $\frac{\pi}{3}$ radians.

The angle BCA is x radians.



16 (a) Explain why angle $BAC = \frac{2\pi}{3} - x$

[1 mark]

16 (b) (i) Use the sine rule to show that

$$\frac{BC}{AB} = \frac{\sqrt{3} \cot x + p}{q}$$

where p and q are integers.

[5 marks]

16 (b) (ii) Hence state the exact value of x when

$$\frac{BC}{AB} = \frac{\sqrt{3} + 1}{2}$$

[1 mark]