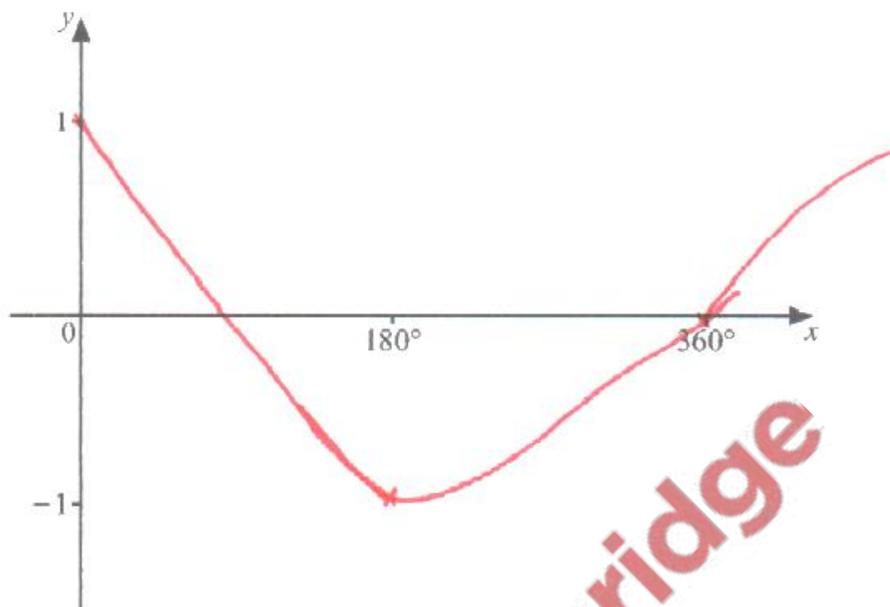1. June/2023/Paper_0444/21/No.19

(a) On the diagram, sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$.

[2]

(b) Solve the equation $2\cos x + 1 = 0$ for $0° \leqslant x \leqslant 360°$.

$2 \cos x + 1 = 0$

$\dfrac{2\cos x}{2} = \dfrac{-1}{2}$

$\cos x = -\dfrac{1}{2}$

$\cos^{-1} x = 120°, \quad 240$

$x =$ ....120....... or $x =$ ....240....... [3]

16

NOT TO SCALE
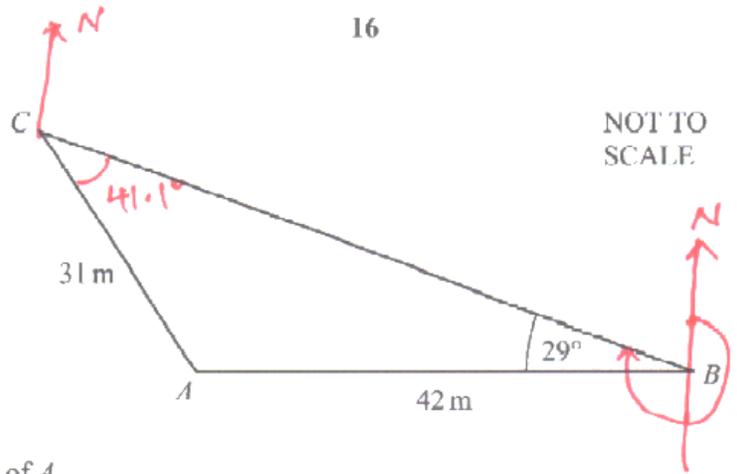
(a) B is due east of A.

Find the bearing of

(i) C from B

$180° + 90° + 29°$

$= 299°$

299 .... [1]

(ii) B from C.

$299° - 18°$

$= 119°$

119 .... [2]

(b) Calculate obtuse angle BAC.

Using Sine rule.

$\dfrac{\sin A}{a} = \dfrac{\sin B}{b} = \dfrac{\sin c}{c}$

$\dfrac{\sin 29°}{31m} = \dfrac{\sin c}{42m}$

$\sin c = \dfrac{42 \sin 29}{31}$

$= 0.65623886$

$c = 41.1°$

Angle sum in a triangle $= 130°$

$\angle BAC = 180° - (41.1° + 29)$

$= 109.9°$

Angle $BAC = $ .... $109.9°$ .... [4]