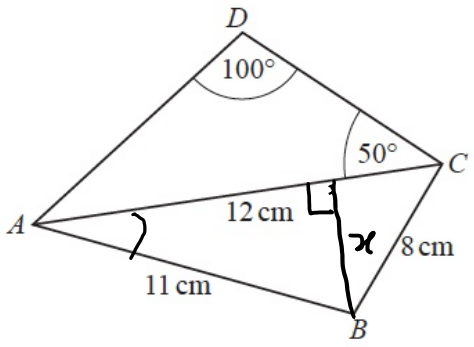
Problem 0580/43/O/N/21 Q6



NOT TO SCALE

(a) Calculate AD.

$$\frac{AD}{\sin 50} = \frac{12}{\sin 100}$$

$$AD = \frac{12 \times \sin 50}{\sin 100}$$

$AD =$ 9.33 cm [3]

(b) Calculate angle BAC and show that it rounds to 40.42°, correct to 2 decimal places.

$$BAC = \cos^{-1}\left[\frac{12^2 + 11^2 - 8^2}{2 \times 12 \times 11}\right]$$

$$= 40.4154 \approx 40.42$$

[4]

(c) Calculate the area of the quadrilateral $ABCD$.

$$= \frac{1}{2} \times 9.33 \times 12 \times \sin 30 + \frac{1}{2} \times 11 \times 12 \times \sin 40.42$$

70.8 cm^2 [3]

(d) Calculate the shortest distance from B to AC.

$$\sin 40.42 = \frac{x}{11}$$

$$x = 11 \sin 40.42$$

7.13 cm [3]