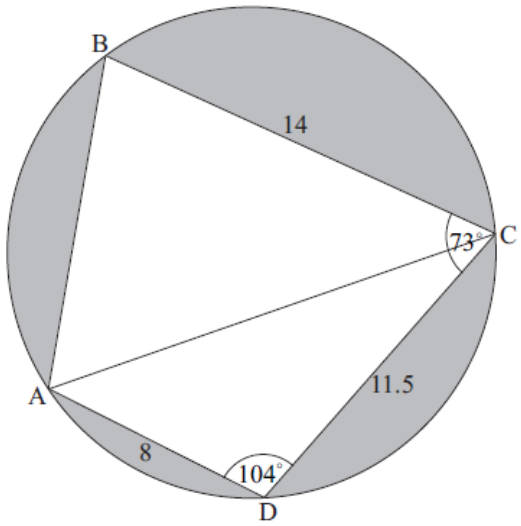
BECA / Huson / IB Math
8 October 2019
1.21 Unit Test: Trigonometry Applications (Trig rules annex)

1a. The diagram shows a circle of radius 8 metres. The points ABCD lie on the circumference of the circle.



BC = 14 m, CD = 11.5 m, AD = 8 m, $A\hat{D}C = 104°$, and $B\hat{C}D = 73°$.

Find AC. *[3 marks]*

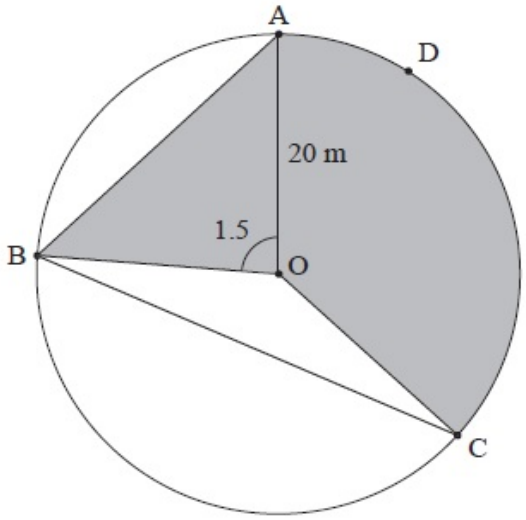
1b. (i) Find $A\hat{C}D$.

(ii) Hence, find $A\hat{C}B$. *[5 marks]*

1c. Find the area of triangle ADC. *[2 marks]*

1d. Hence or otherwise, find the total area of the shaded regions. *[4 marks]*

2a. The following diagram shows a circular play area for children.



The circle has centre O and a radius of 20 m, and the points A, B, C and D lie on the circle. Angle AOB is 1.5 radians.

Find the length of the chord [AB]. *[3 marks]*

2b. Find the area of triangle AOB. *[2 marks]*

2c. Angle BOC is 2.4 radians.

Find the length of arc ADC. *[3 marks]*

2d. Angle BOC is 2.4 radians.

Find the area of the shaded region. *[3 marks]*

2e. Angle BOC is 2.4 radians.

The shaded region is to be painted red. Red paint is sold in cans which cost $\$32$ each. One can covers $140\ \text{m}^2$. How much does it cost to buy the paint? *[4 marks]*