Mathematics AA - IB$_1$

Test 5

subject: *Trigonometry II*

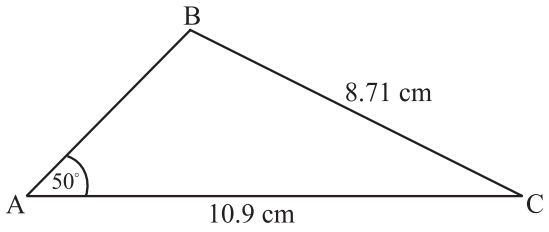
Wednesday 19 march 2025

Name: _____

Problem 1 [6 marks]

In the **obtuse-angled** triangle ABC, $\text{AC} = 10.9 \text{ cm}$, $\text{BC} = 8.71 \text{ cm}$ and $\text{B}\hat{\text{A}}\text{C} = 50^\circ$.

Not to scale



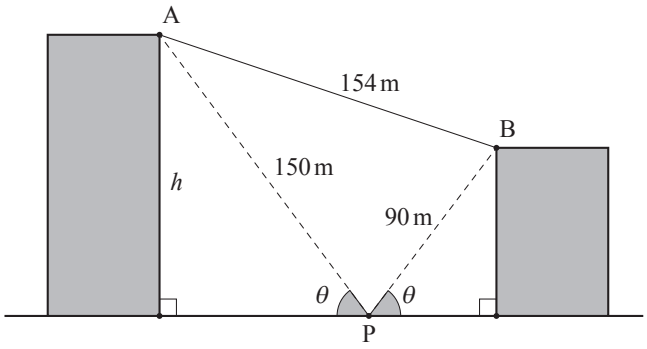
Find the area of triangle ABC.

Problem 2 [6 marks]

The following diagram shows two buildings situated on level ground.

From point P on the ground directly between the two buildings, the angle of elevation to the top of each building is θ.

diagram not to scale



The distance from point P to point A at the top of the taller building is 150 metres.

The distance from point P to point B at the top of the shorter building is 90 metres.

The distance between A and B is 154 metres.

(a) Find the measure of $\text{A}\hat{\text{P}}\text{B}$. [3]

(b) Find the height, h, of the taller building. [3]

Problem 3 *[15 marks]*

The diagram below shows a circle with centre O and radius 8 cm.

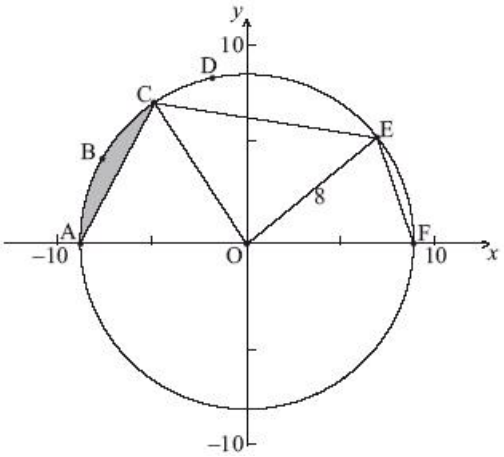


diagram not to scale

The points A, B, C, D, E and F are on the circle, and [AF] is a diameter. The length of arc ABC is 6 cm.

(a) Find the size of angle AOC.

(2)

(b) Hence find the area of the shaded region.

(6)

The area of sector OCDE is 45 cm^2.

(c) Find the size of angle COE.

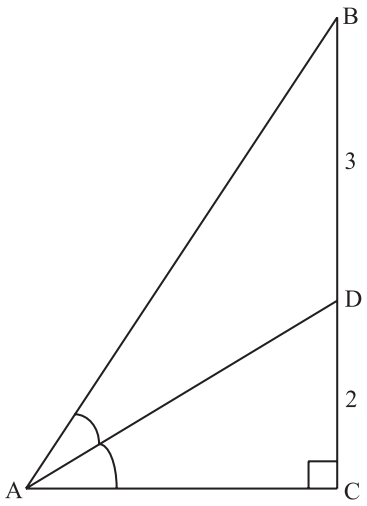
(2)

(d) Find EF.

(5)

Problem 4 *[6 marks]*

Let ABC be a right-angled triangle, where $\hat{C} = 90^\circ$. The line (AD) bisects $B\hat{A}C$, $BD = 3$, and $DC = 2$, as shown in the diagram.



Find angle $D\hat{A}C$.