Circle theorems and their applications

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. ABCD is cyclic and $\angle A = 112°$. Find $\angle C$. [2 marks]

$180 - 112 = 68$.

Answer: 68°

2. A simple quadrilateral has opposite angles 96° and 84°. What can be concluded? [2 marks]

The opposite angles sum to 180°.

Answer: It is cyclic.

3. A tangent-chord angle is 41° and C lies in its alternate segment. Find the corresponding circumference angle. [2 marks]

Use the alternate-segment theorem.

Answer: 41°

4. A cyclic quadrilateral has opposite angles $3x + 10$ and $5x - 6$ degrees. Find x and both angles. [3 marks]

$8x + 4 = 180$ gives $x = 22$.

$3 \times 22 + 10 = 76$; $5 \times 22 - 6 = 104$.

Answer: $x = 22$; 76° and 104°.

5. ABCD is cyclic. An exterior angle at A is 65°. Find interior $\angle C$ and explain. [3 marks]

Interior $A = 115°$.

Opposite $C = 180 - 115 = 65$.

Answer: 65°

6. A radius meets a tangent at A. Chord AB makes 35° with radius AO. Find the smaller angle between the tangent line and chord line. [2 marks]

Radius and tangent make 90°.

The remaining angle is $90 - 35 = 55$.

Answer: 55°