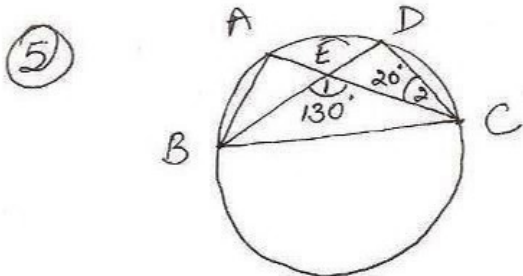


to find $\angle BDC$

Sol In $\triangle ABC$
 $\angle A + \angle ABC + \angle ACB = 180^\circ$
 $\angle A + 69^\circ + 31^\circ = 180^\circ$
 $\Rightarrow \angle A = 180^\circ - 100^\circ$
 $= 80^\circ$

$\angle BDC = \angle A = 80^\circ$
 [angles in same segment]



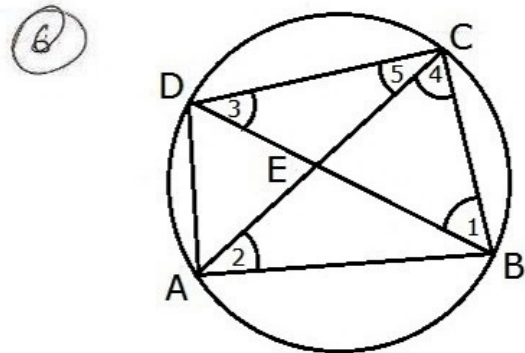
to find $\angle BAC$

Solution

$\angle 1 = \angle 2 + \angle D$ (exterior \angle prop. of \triangle)

$130^\circ = 20^\circ + \angle D$
 $\Rightarrow \angle D = 130^\circ - 20^\circ$
 $= 110^\circ$

$\angle D = \angle A = 110^\circ$ (angles in same segment)
 $\therefore \angle BAC = 110^\circ$



to find $\angle BDC$
 $\angle ECD$

Sol.

$\angle 3 = \angle 2 = 30^\circ$ (angles in same segment)

In $\triangle BCD$
 $\angle 1 + \angle 3 + \angle BCD = 180^\circ$
 $70^\circ + 30^\circ + \angle BCD = 180^\circ$
 $\Rightarrow \angle BCD = 180^\circ - 100^\circ$
 $= 80^\circ$

In $\triangle BAC$
 $AB = BC$
 $\Rightarrow \angle 4 = \angle 2 = 30^\circ$

$\angle BCD = \angle 4 + \angle 5$
 $80^\circ = 30^\circ + \angle 5$
 $\Rightarrow \angle 5 = 80^\circ - 30^\circ$
 $\angle ECD = 50^\circ$