

# ICSE 2017 Q8 b

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0.1. Solution:

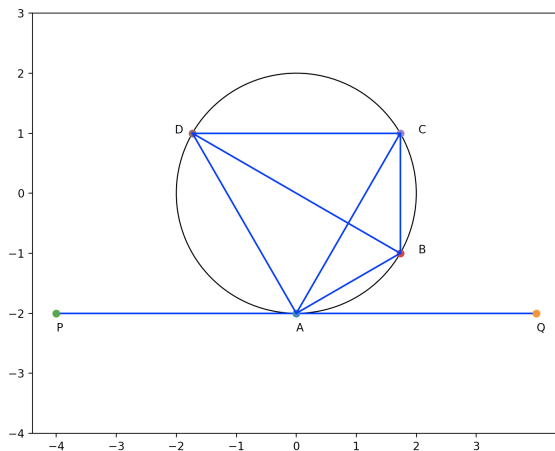
$\angle BAQ = 30^\circ$   
 $\Rightarrow \angle BAC = 30^\circ$   
 also  $\angle CAP = 180^\circ - \angle CAQ \Rightarrow \angle CAP = 120^\circ$   
 $\Rightarrow \angle CAD = \angle PAD = 60^\circ$   
 $\Rightarrow \angle BAD = 90^\circ$   
 $\Rightarrow BD$  is a diameter  
 $\angle ADB = \angle ACB = 30^\circ$   
 [Angle made a chord at two different points ]  
 Also  $\angle CAB = 30^\circ$   
 $\Rightarrow \triangle ABC$  is an isosceles triangle

Finding the coordinates of the points B.

- a) A(0, -2).
- b)  $\angle BAQ = 30^\circ$
- c)  $|AB| = 2$
- d)  $\Rightarrow B(-1, \sqrt{3})$

Finding the coordinates of the points C.

- a) A(0, -2).
- b)  $\angle CAQ = 60^\circ$
- c)  $|AC| = 2\sqrt{3}$
- d)  $\Rightarrow C(1, \sqrt{3})$



Finding the coordinates of the points D.

- a) A(0, -2).
- b)  $\angle DAP = 60^\circ$
- c)  $|AD| = 2\sqrt{3}$
- d)  $\Rightarrow D(1, -\sqrt{3})$

Steps for drawing the diagram:

- a) Draw a circle.
- b) Draw the tangent PQ
- c) Plot A
- d) Draw the chord AB
- e) Draw the chord AC
- f) Draw the chord AD
- g) Draw the chord BD