## Question 4

The diagram shows a semi-circle standing on a diameter $[A C]$, and $[B D] \perp[A C]$.
(a) (i) Prove that the triangles $A B D$ and $D B C$ are similar.


(ii) If $|A B|=x,|B C|=1$, and $|B D|=y$, write $y$ in terms of $x$.

(b) Use your result from part (a)(ii) to construct a line segment equal in length (in centimetres) to the square root of the length of the line segment [TU] which is drawn below.

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