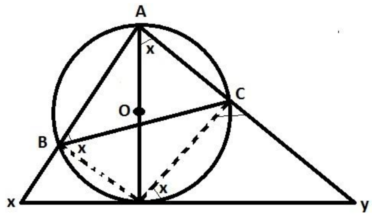
Triangle ABC is inscribed in circle with centre O. seg AD is a diameter. tangent to the circle at point D intersects seg AB in X and AC in Y. To prove: AB x AX = AC x AY.

Answer:



Let ∠CDY be x°, then :

1) $\angle DAC = x°$;
   Similary , $\angle CBD = x°$. (i)
   $\angle ABD = 90°$ (ii) Angle in the semicirele.
2) $\angle ABC = (90 - x)°$, From (i) and (ii) . Also, in $\Delta DCY,$ $\Delta DCY = 90°,$ $\Delta ACD = 90°$
   And $\angle DCY = x°$.
3) $\angle CYD = (90 - x)°$. Angle sum property;
4) $\Delta ABC\ and\ \Delta AYX$: $\angle ABC = \angle AYX = (\mathbf{90 - x})°$.
   Also $\angle A = \angle A$.
5) $\Delta ABC \sim \Delta AYX$ (AA criterion), then $\frac{AB}{AY} = \frac{AC}{AX} \rightarrow AB \times AX = AC \times AY$.
   Hence proved.