b. $A_{ABC} = \frac{\text{Base} \times \text{height}}{2} = \frac{AB \times AC}{2} = \frac{6 \times 2}{2} = 6\,cm^2$.

$A_{ABC} = \frac{\text{Base} \times \text{height}}{2} = \frac{BC \times AH}{2}$

$\Rightarrow \frac{BC \times AH}{2} = \frac{6\,cm^2}{1}$

$\Rightarrow BC \times AH = 12$.

$\therefore AH = \frac{12}{BC} = \frac{12}{2\sqrt{10}} = \frac{6}{\sqrt{10}} = \frac{6\sqrt{10}}{10} = \frac{3\sqrt{10}}{5}$.

4. yes, (BC) is tangent to (c) a H.

Since AH is radius.
and $AH \perp BC$ at H (given).

$\therefore$ (BC) is tangent to (C) at H. (tangent theorem).