Para hallar A' hallamos el vector $\vec{GN}$

$$\vec{GN} = \left(-\frac{b}{2}, \frac{2}{3}(a_1+b), 0\right) - \left(\frac{b+a_1}{3}, \frac{a_2}{3}\right) =$$

$$= \left(\frac{-b}{2} + \frac{1}{3}(a_1+b), -\frac{a_2}{3}\right)$$

$$A' = N + \vec{GN} = \left(\frac{-b}{2} + \frac{2}{3}(a_1+b), 0\right) + \left(\frac{-b}{2} + \frac{1}{3}(a_1+b), \frac{-a_2}{3}\right)$$

$$= \left(-b + a_1 + b, \frac{-a_2}{3}\right) = \boxed{\left(a_1, -\frac{a_2}{3}\right) = A'}$$

b/ $A' = S$

$$\vec{GS} = \left(a_1, -\frac{a_2}{3}\right) - \left(\frac{b+a_1}{3}, \frac{a_2}{3}\right) =$$

$$= \left(a_1 - \frac{b}{3} - \frac{a_1}{3}, -\frac{2a_2}{3}\right) = \left(\frac{2}{3}a_1 - \frac{b}{3}, -\frac{2a_2}{3}\right)$$

$\vec{GS} \cdot \vec{i} = \frac{2}{3}a_1 - \frac{b}{3} \neq 0 \Rightarrow$ No es perpendicular a BC

Creo que querían decir que AS es perpendicular a BC