

2a) His orthogonal projection of A on (BC) (Given)

then, (AH) \perp (BC)

hence, Slope (AH) \times Slope (BC) = -1.

$$\text{Slope (AH)} (3) = -1$$

$$\text{Then, Slope (AH)} = -\frac{1}{3}.$$

And A belongs to (AH):

$$\text{hence, (AH): } \frac{y - y_A}{x - x_A} = a_{(AH)}.$$

$$\frac{y+4}{x-0} = -\frac{1}{3}.$$

$$y+4 = -\frac{1}{3}x$$

$$\text{Thus, (AH): } y = -\frac{1}{3}x - 4.$$

coordinates

b) To Find pt H the pt of intersection of st. line (AH) & (BC)
Solve the system form out of their eqns.

$$\begin{cases} \text{(BC): } y = 3x + 6 \\ \text{(AH): } y = -\frac{1}{3}x - 4. \end{cases} \quad (\text{by comparison})$$

$$(3x + 6 = -\frac{x}{3} - 4) \times (3)$$

$$9x = -x - 30$$

$$10x = -30$$

$$\boxed{x = -3}$$

sub value of x in eqn of (BC) to get

$$\boxed{y = -3}$$

Thus, H (-3, -3).