Horizontal Plane

A plane travelling horizontally passes overhead at a height h at $t = 0$. At time $t = t_1$ a sonic boom is heard.

a) Draw a diagram of the plane at $t = t_1$, the path of the plane, the observer and the shockwave cone. Label the point where the plane was at $t = 0$.

b) Determine the speed of the plane.

$v_{\text{plane}} = $ _____

c) What is the $t_1 \to 0$ limit of your answer to part (b)? (Hint: What would the shockwave cone look like in this case?)

$\lim_{t_1 \to 0} v_{\text{plane}} = $ _____