Problem 1. Given ΔABC with vertices at $A(0,0), B(b,0), C(a,h)$ with all a, b, h positive real numbers. Let M_1 be the mid point of segment BC, M_2 be the midpoint of segment AM_1, M_3 be the mid point of BM_2, ..., M_{2k} be the mid point of AM_{2k-1} and M_{2k+1} be the mid point of BM_{2k} for $k = 1, 2, ...$ Show that the evenly idexed mid-points converge to the point on segment AB which is one-third away from vertex A and the oddly-indexed mid-points converge to a point on side AB which is two-third away from vertex A. Precisely $\mathrm{M}_{2k} \longrightarrow \left(\frac{b}{h}, 0\right)$ and $M_{2k+1} \longrightarrow \left(\frac{2b}{h}, 0\right)$ as $k \longrightarrow \infty$