Fixedpoint Study Question

Consider the recursive function definition on the Natural numbers, $N = \{0, 1, 2, \ldots\}$,
   $f(n) = $ **if** $n=0$ **then** 0 **else** $n + f(n-1)$.

Determine the approximating functions f_0, f_1, f_2, $\ldots$ and show what their limit function lub $\{f_i\}$ is.