## Problem 9.10

Given $H(z)=z^{-6}-2 z^{-7}+4 z^{-8}-z^{-9}$, hence $h[n]=\delta[n-$ $6]-2 \delta[n-7]+4 \delta[n-8]-\delta[n-9]$ and input
$x[n]=2 \delta[n]+3 \delta[n-3]-8 \delta[n-6]+3 \delta[n-9]$
(a) $N_{1}=6$ and $N_{2}=18$ as $y[n]=x[n] * h[n]$, and it will be zero for $n<N_{1}$ and $n>N_{2}$ as $N_{1}$ is the lowest power of the convolution terms and $N_{2}$ is the highest power of the convolution terms.
(b) $y\left[N_{1}\right]=y[6]=2$ and $y\left[N_{2}\right]=y[18]=-3$.
(c) The entire sequence of $y[n]=x[n] * h[n]$ is:
$y[n]=2 \delta[n-6]-4 \delta[n-7]+8 \delta[n-8]+\delta[n-9]-6 \delta[n-$ $10]+12 \delta[n-11]-11 \delta[n-12]+16 \delta[n-13]-32 \delta[n-14]+$ $11 \delta[n-15]-6 \delta[n-16]+12 \delta[n-17]-3 \delta[n-18]$.

