Problem 9.10

Given
$$H(z) = z^{-6} - 2z^{-7} + 4z^{-8} - z^{-9}$$
, 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)
$$y[N_1] = y[6] = 2$$
 and $y[N_2] = y[18] = -3$.

(c) The entire sequence of
$$y[n] = x[n] * h[n]$$
 is:
 $y[n] = 2\delta[n-6] - 4\delta[n-7] + 8\delta[n-8] + \delta[n-9] - 6\delta[n-10] + 12\delta[n-11] - 11\delta[n-12] + 16\delta[n-13] - 32\delta[n-14] + 11\delta[n-15] - 6\delta[n-16] + 12\delta[n-17] - 3\delta[n-18].$