HW #4

1) [Proakis] Consider the following channel with AWGN of variance $N_0$. Suppose we use a two tap feedforward and one tap feedback DFE.

- What is the optimum MSE coefficients and their approx when $N_0 << 1$
- Find exact min. MSE and its approx. for $N_0 << 1$
- What is the exact value of SNR for the equalizer as a function of $N_0$ and approximate $N_0 << 1$
- Compare the above results with those of infinite tap equalizer
- Find the exact value of the output SNR when $N=0.1$ and $0.01$. Compare the performance with infinite equalizer.
3) Apply the normalized LMS algorithm to problem 3 of HW # 3 and discuss the results.

<table>
<thead>
<tr>
<th>Impulse response</th>
<th>#taps</th>
<th>Step size</th>
<th>Noise power</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.955, 1.0, 0.955</td>
<td>11</td>
<td>0.08</td>
<td>0.001</td>
</tr>
</tbody>
</table>