Solve the following problems from Oppenheim:

1- 5.29
2- 5.37
3- 5.51

4- Use the Fourier Transform analysis equations to calculate the Fourier Transform of
a) \( \left( \frac{1}{2} \right)^{n-1} u(n-1) \)
b) \( \left( \frac{1}{2} \right)^{n} u(n-1) \)
c) \( 2 + \cos\left( \frac{\pi}{6} n + \frac{\pi}{8} \right) \quad -\pi < \omega < \pi \)

5- An LTI system with impulse response \( h_1(n) = \left( \frac{1}{3} \right)^n u(n) \) is connected in parallel with another casual LTI System with impulse response \( h_2(n) \). The resulting parallel interconnection has the frequency response

\[
H(e^{j\omega}) = \frac{-12 + 5e^{-j\omega}}{12 - 7e^{-j\omega} + e^{-2j\omega}}
\]

Determine \( h_2(n) \).