Demo 8

1. Problem 7.49 on pg. 577 of OWN.

2. Problem 8.8 on pg. 627 of OWN.

3. Problem 8.12 on pp. 628-629 of OWN.

4. The following figure shows a balanced modulator. \( x(t) \) is the modulating signal, which is assumed to be bandlimited to \([-\omega_M,\omega_M]\). The oscillator produces a sinusoid at the carrier frequency \( \omega_c \). Assume that \( \omega_M < \omega_c \).

   (a) Sketch the Fourier spectra \( Y_1(j\omega) \), \( Y_2(j\omega) \) and \( Y(j\omega) \).

   (b) Show that the output \( y(t) \) gives DSB-SC AM (double sideband suppressed carrier amplitude modulation) of the modulating signal onto the carrier.