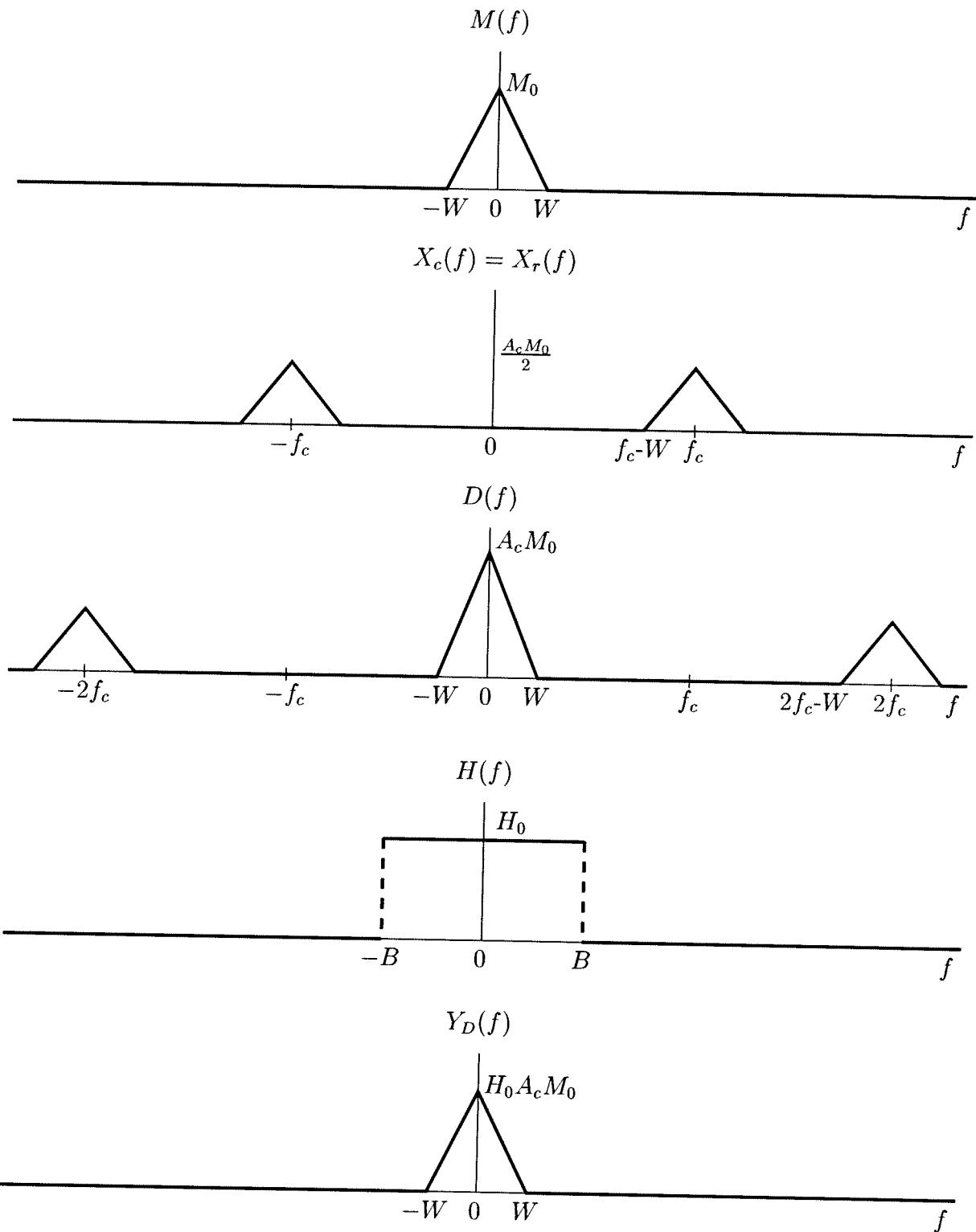


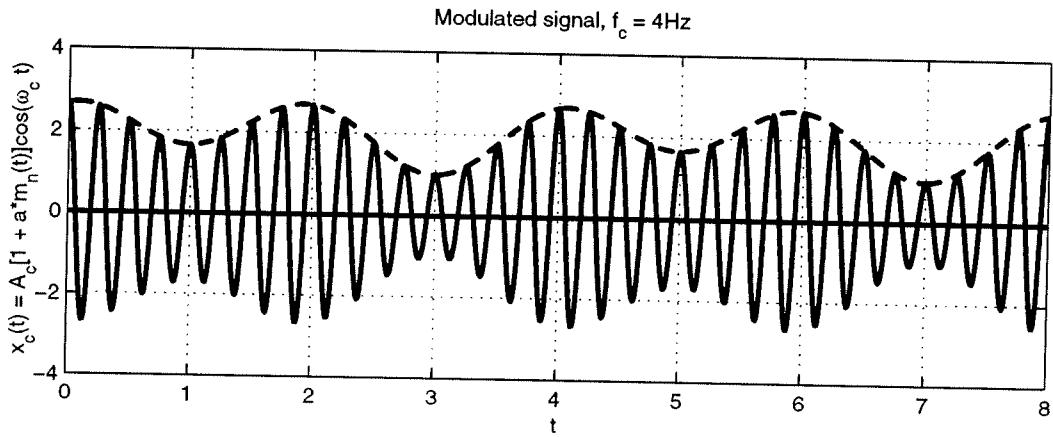
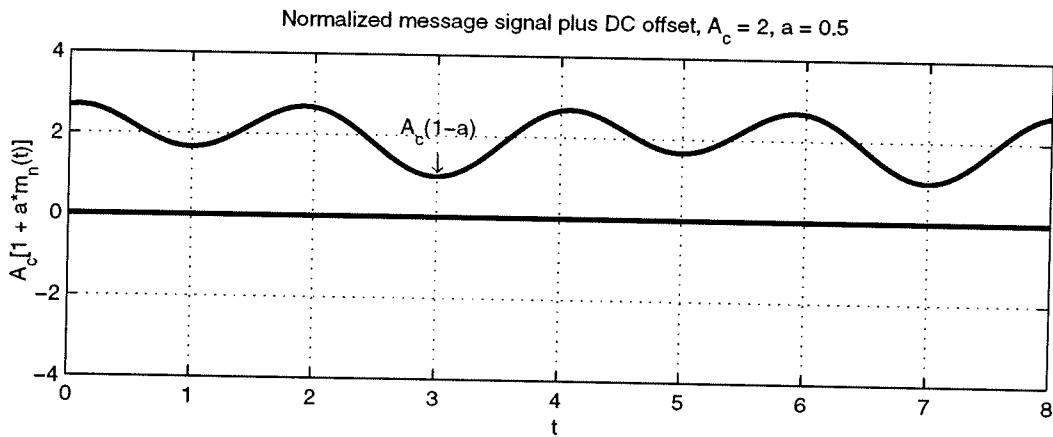
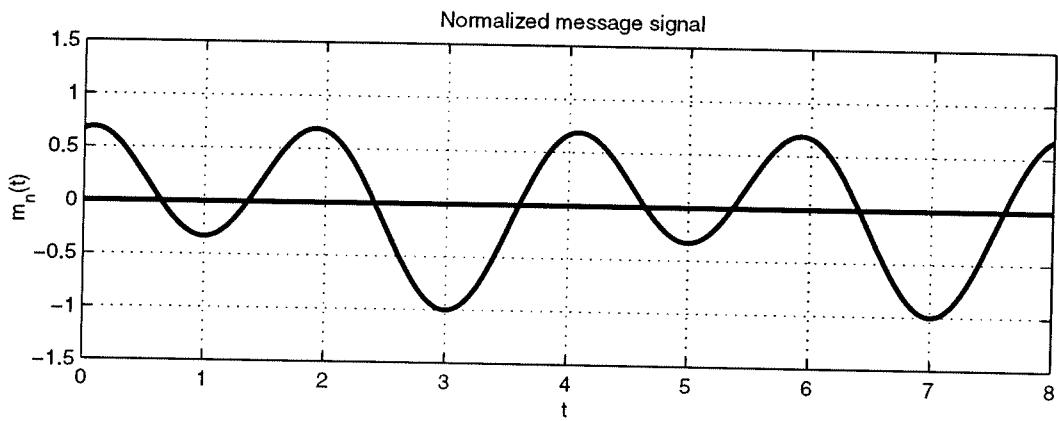
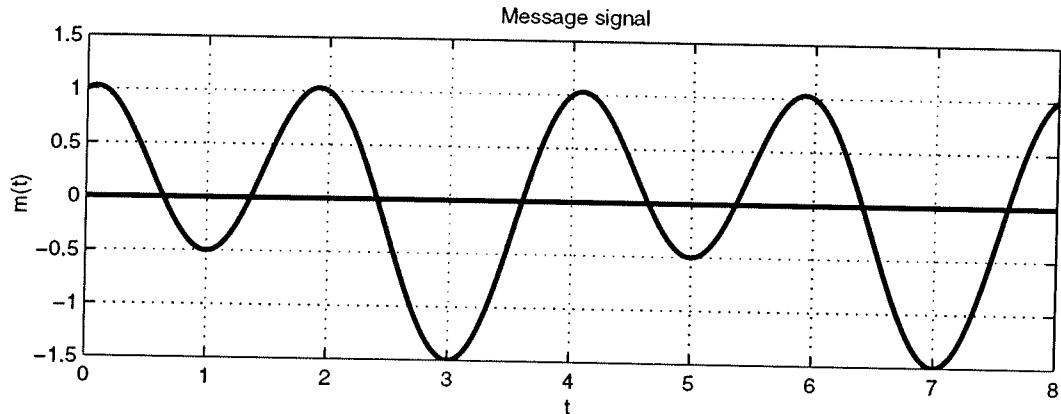
Double-Sideband Modulation (DSB)

Modulation and Recovery of a DSB-modulated Signal



Amplitude Modulation (AM)

$$m(t) = \cos(\pi t) + \frac{1}{2} \sin\left(\frac{\pi}{2}t\right), \quad m_n(t) = \frac{m(t)}{|\min[m(t)]|}, \quad A_c = 2, a = \frac{1}{2}, f_c = 4\text{Hz}$$

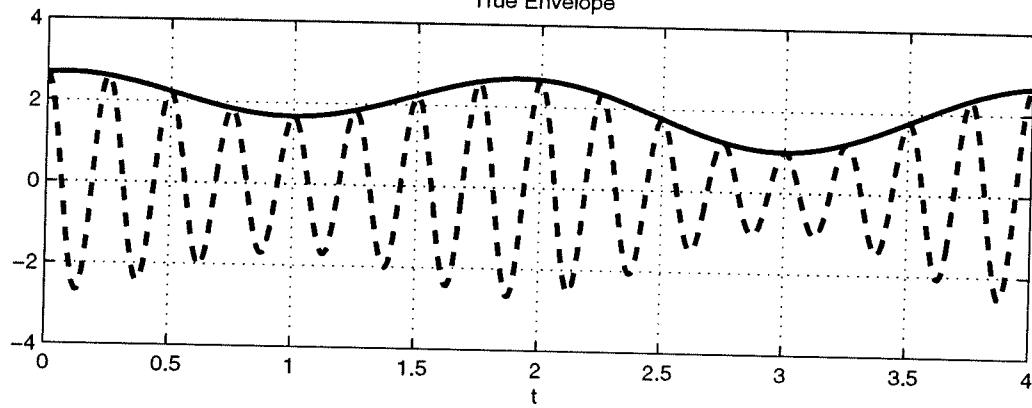


Amplitude Modulation (AM)

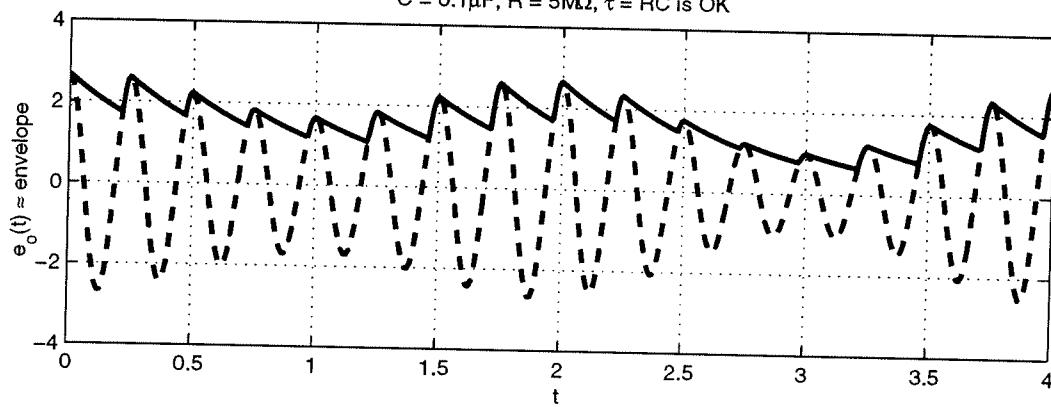
Demodulation via Envelope Detection

$$x_r(t) = A_c [1 + am_n(t)] \cos(\omega_c t)$$

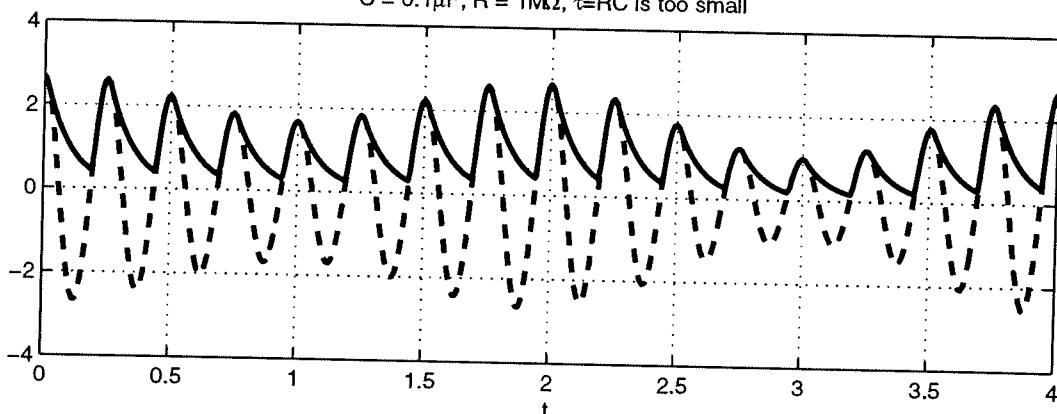
True Envelope



$C = 0.1\mu F, R = 5M\Omega, \tau = RC$ is OK



$C = 0.1\mu F, R = 1M\Omega, \tau = RC$ is too small



$C = 0.1\mu F, R = 20M\Omega, \tau = RC$ is too large

