• We went over the loop equations that describe the operation of a Phase Locked Loop (PLL), which is given in pages 213 - 216.

• An application of the PLL is to recover the carrier from a transmitted DSB-SC AM signal (recall that the DSB-SC AM signal does not have a DC term, and does not have an explicit carrier component in it, which means we would need to extract the carrier for synchronous demodulation). Figure 4.29 depicts this.

• Yet another application is FM demodulation, as described in pages 283, 284.

• We spoke about the superheterodyne analog AM/FM receiver, the concept of translating a radio station of any carrier frequency to an intermediate frequency, processing the signal at that intermediate frequency (which is fixed, no matter what radio station we tune to), and then demodulate it to recover our message. For every radio station at $f_c$ that is received by this receiver, if the intermediate frequency is $f_{IF}$, there is another radio station that will also be received (along with $f_c$), located at $f_c + 2f_{IF}$. This other radio station is called an image station, and is usually rejected using a bandpass filter after the antenna. All this is described in Section 5.6.

• We discussed the process and importance of sampling, and Nyquist’s theorem which says that we must sample at twice the highest frequency of the message. We will discuss sampling further in Class 13.