



Ingeniería Informática

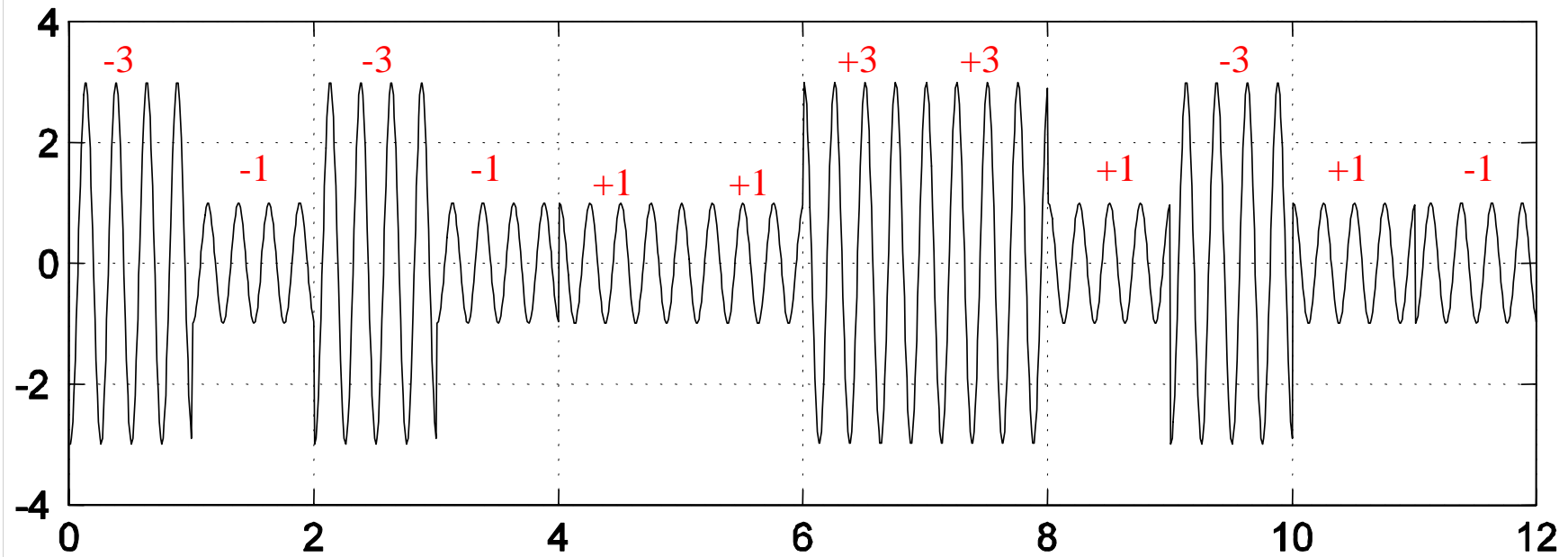
Medios de Transmisión (MT)

Tema 9

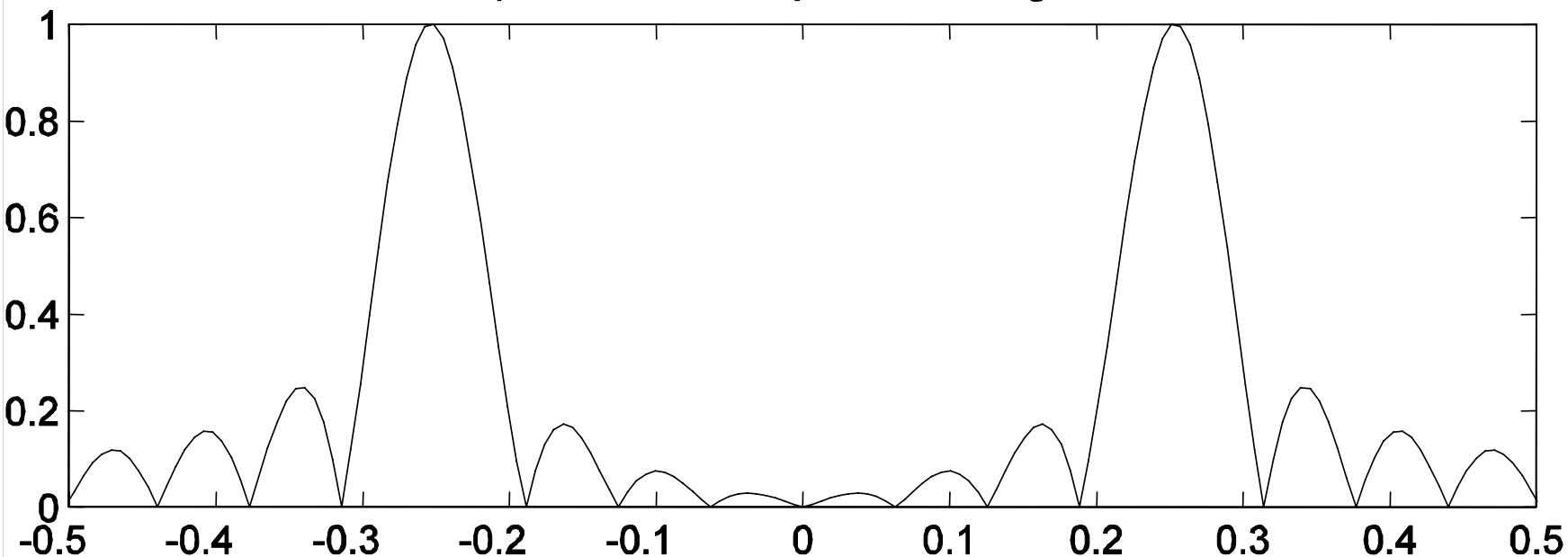
Transmisión digital paso banda

Curso 2006-07

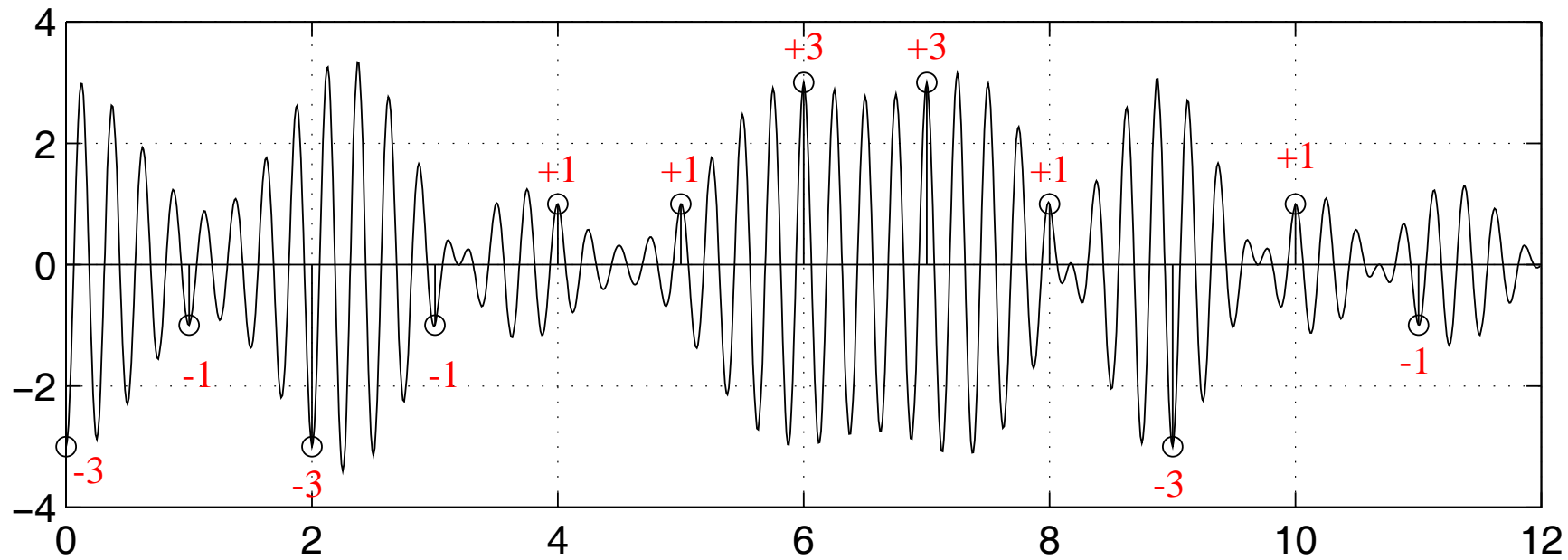
Tren de pulsos 4 ASK



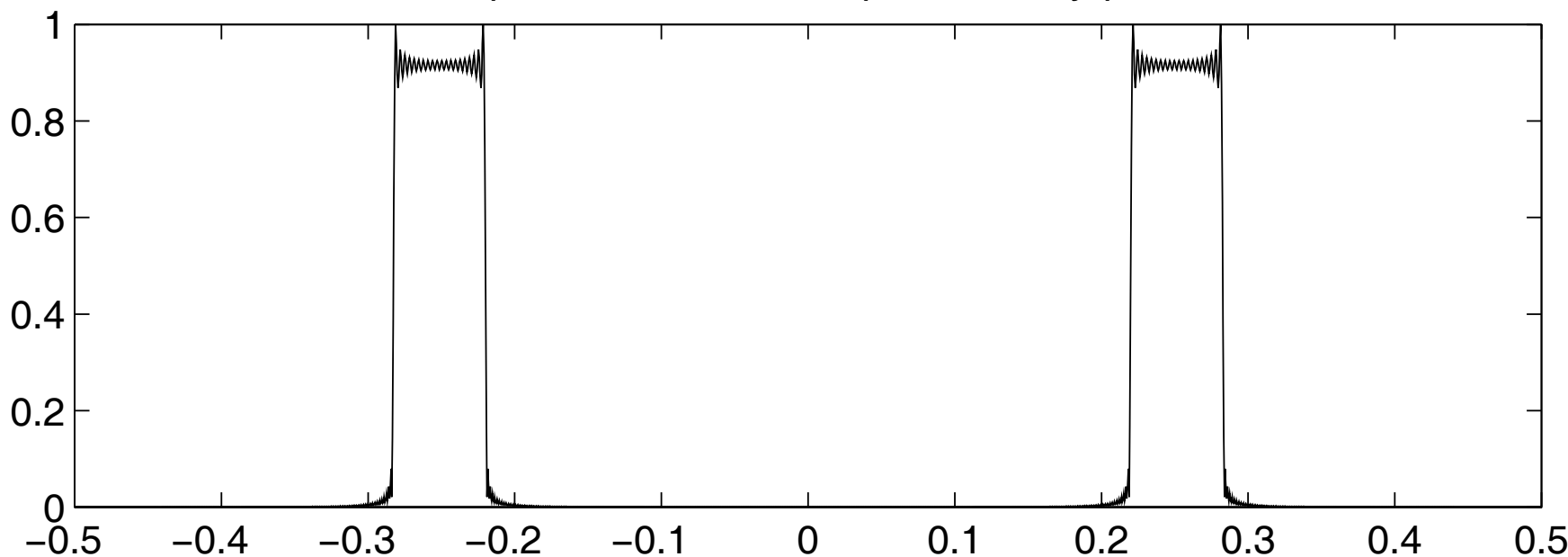
Espectro de 4 ASK pulsos rectangulares



Tren de pulsos 4 ASK



Espectro de 4 ASK con pulsos de Nyquist



Probabilidad de error de un sistema M-ASK

$$p(e) = \frac{2(M-1)}{M} Q\left(\sqrt{\frac{6 \log_2 M}{M^2-1} \frac{E_b}{N_0}}\right)$$

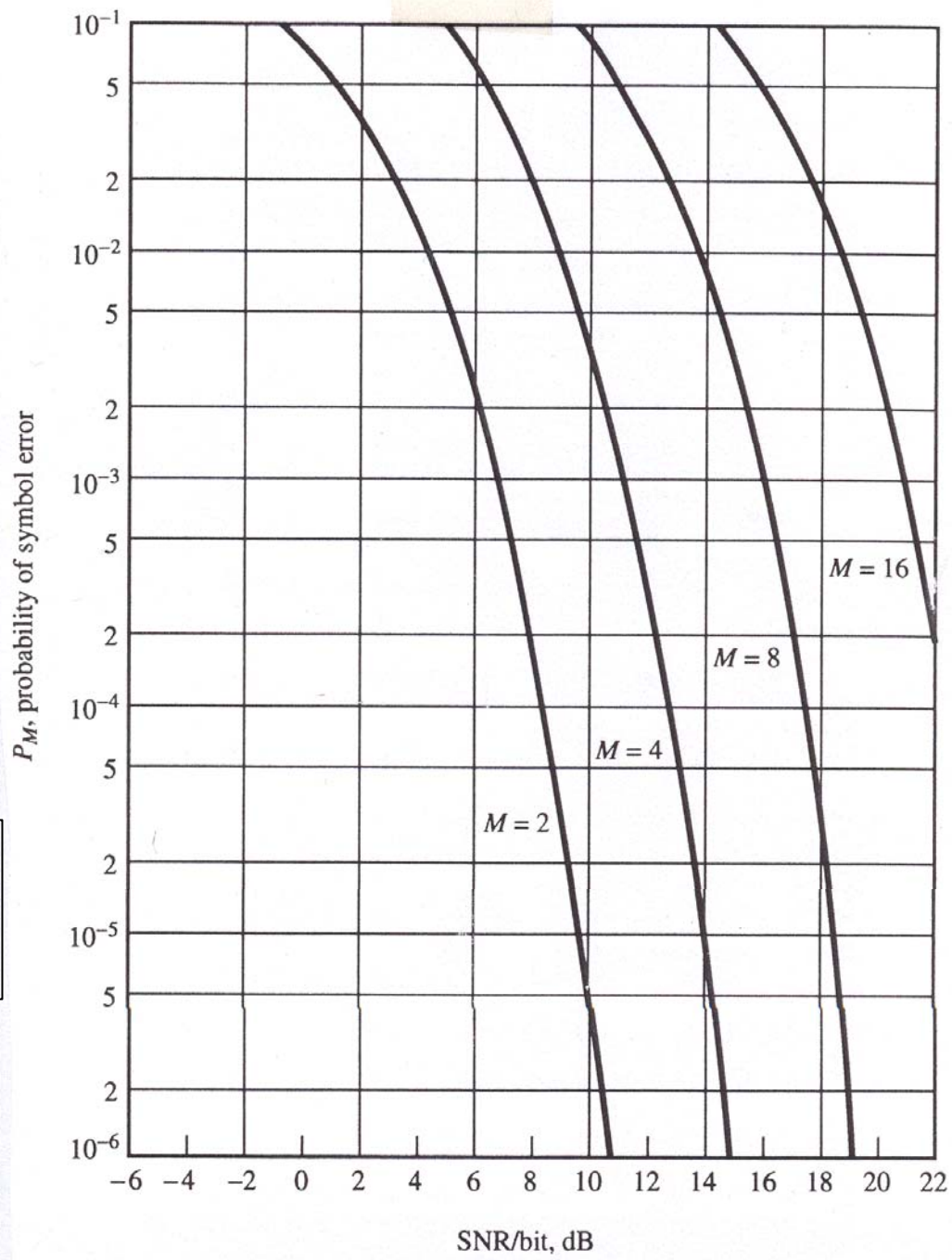
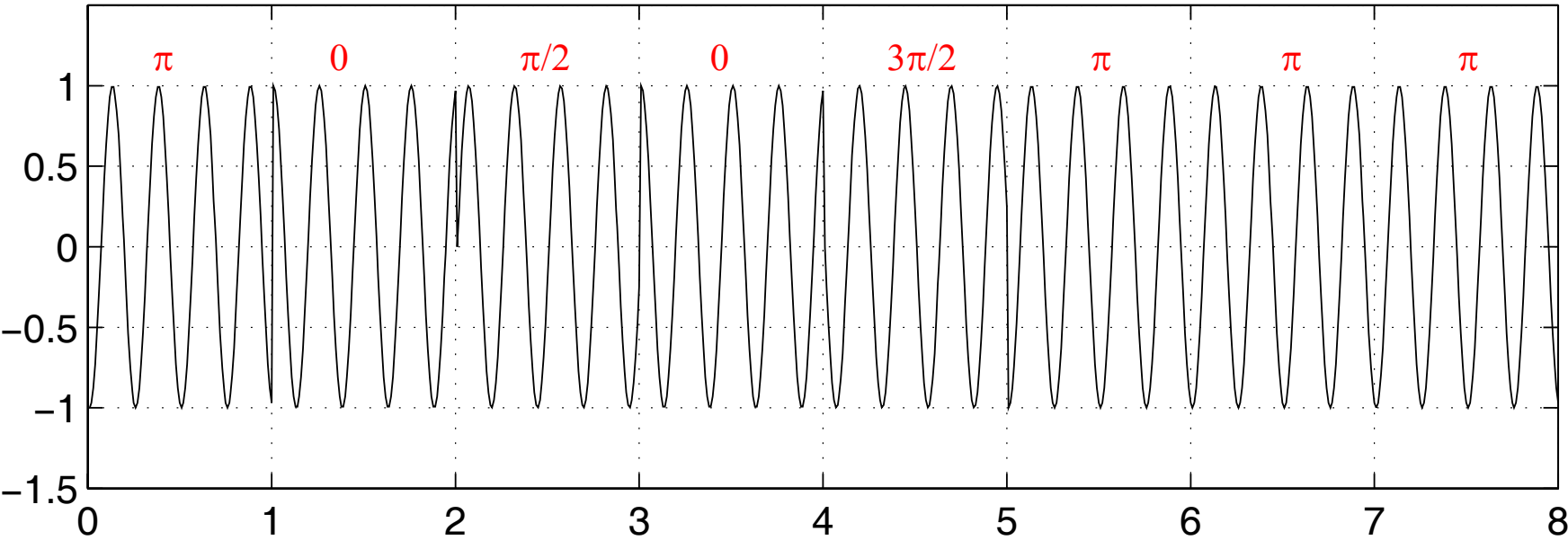
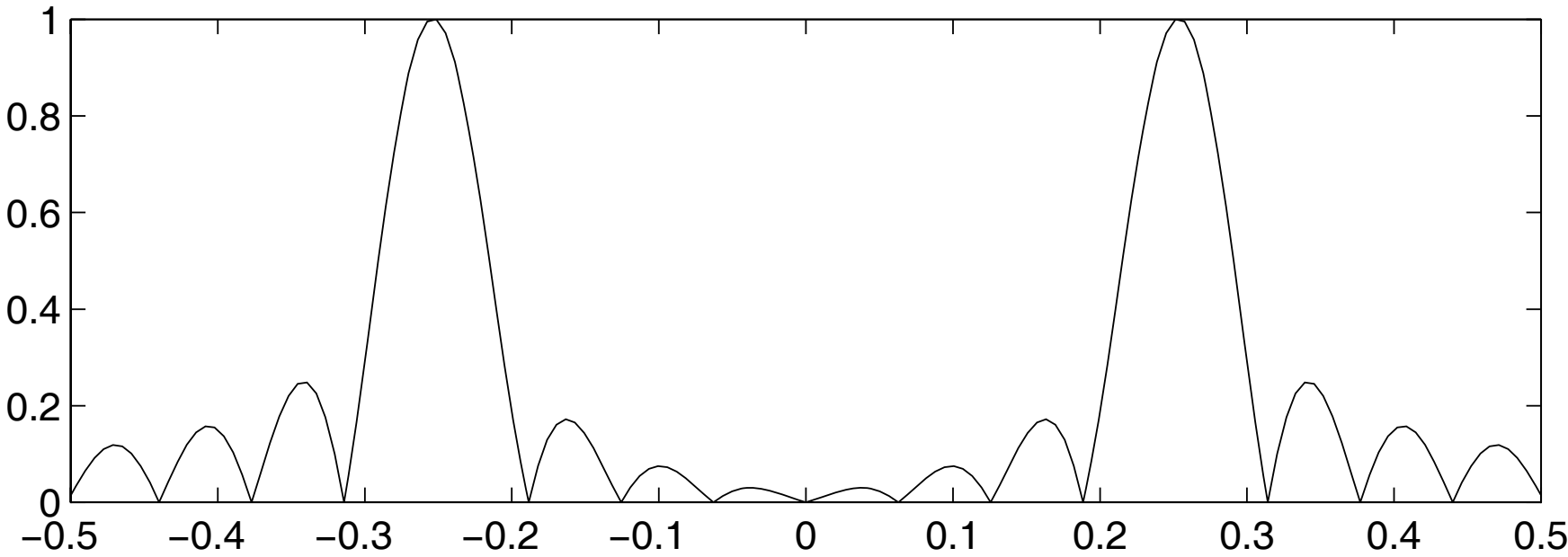


FIGURE 7.44. Probability of a symbol error for PAM.

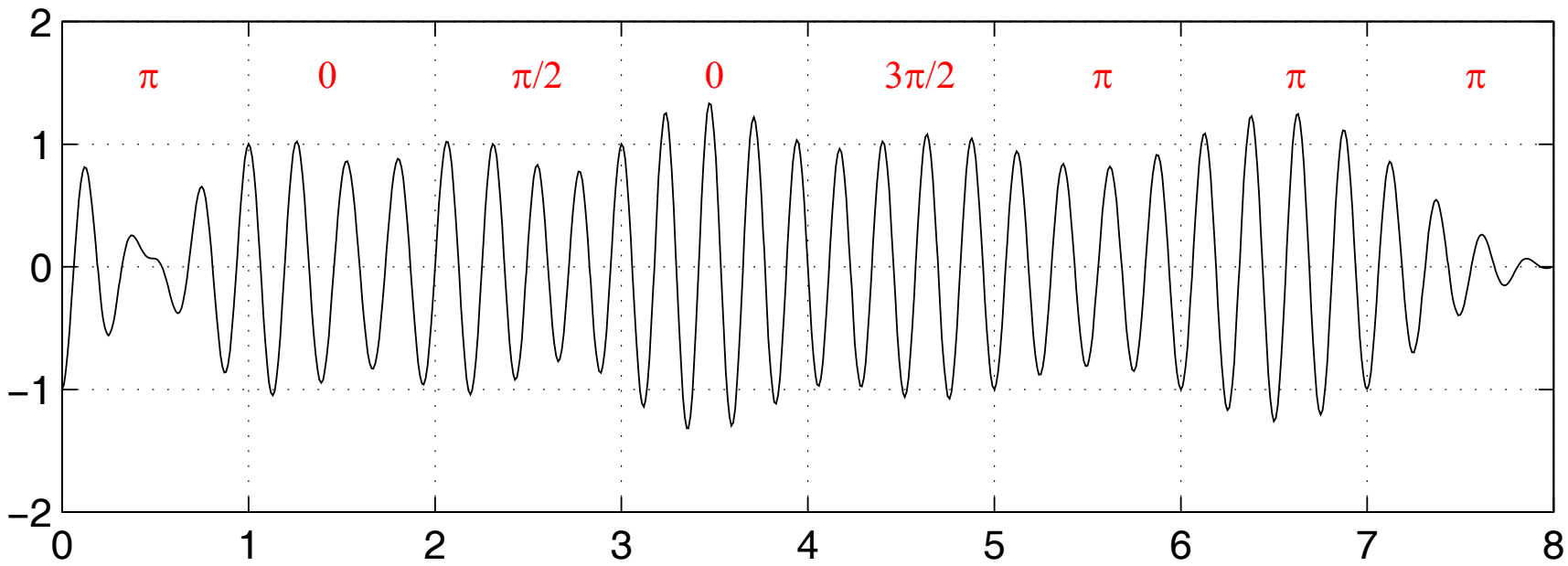
4 PSK con pulsos rectangulares



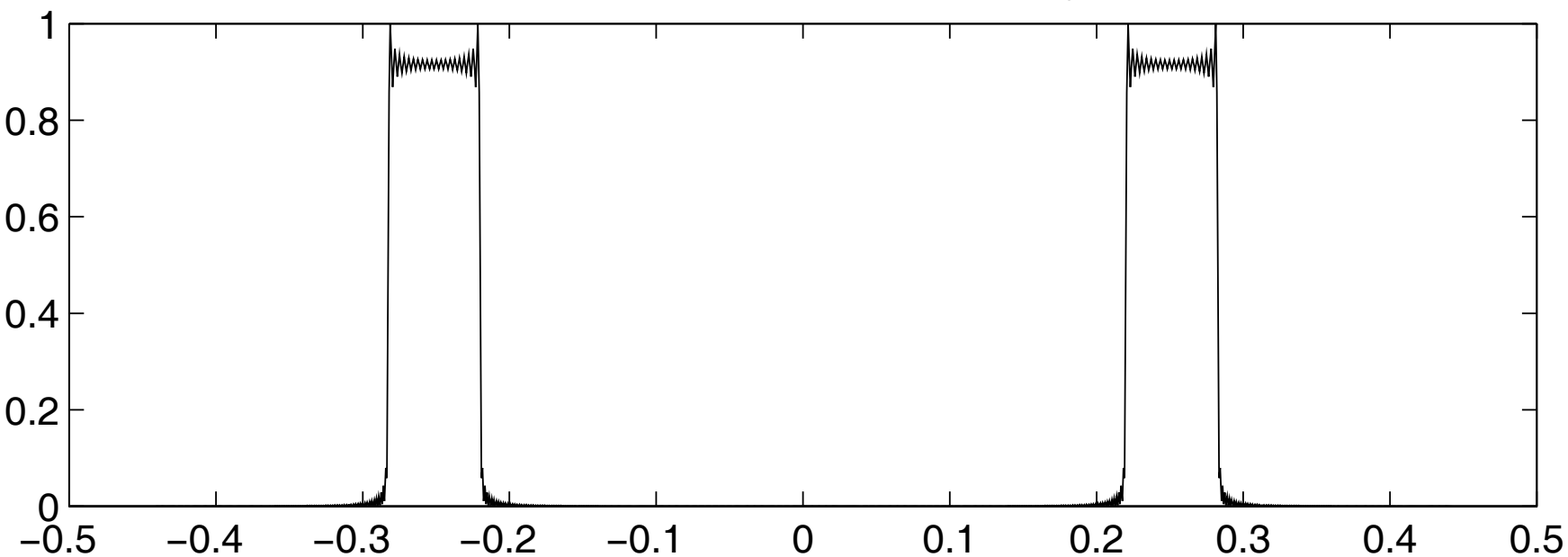
Espectro de 4 PSK pulsos rectangulares



4 PSK con pulsos de Nyquist



Espectro de 4 PSK con pulsos de Nyquist



Probabilidad de error
de un sistema M-PSK

$$p(e)=Q\left(\sqrt{\frac{2E_b}{N_0}}\right)$$

M=2

$$p(e) \approx 2Q\left(\sqrt{\frac{2E_b}{N_0}}\right)$$

M=4

$$p(e) = 2Q\left(\text{sen}\left(\frac{\pi}{M}\right)\sqrt{2\log_2(M)\frac{E_b}{N_0}}\right)$$

M > 4

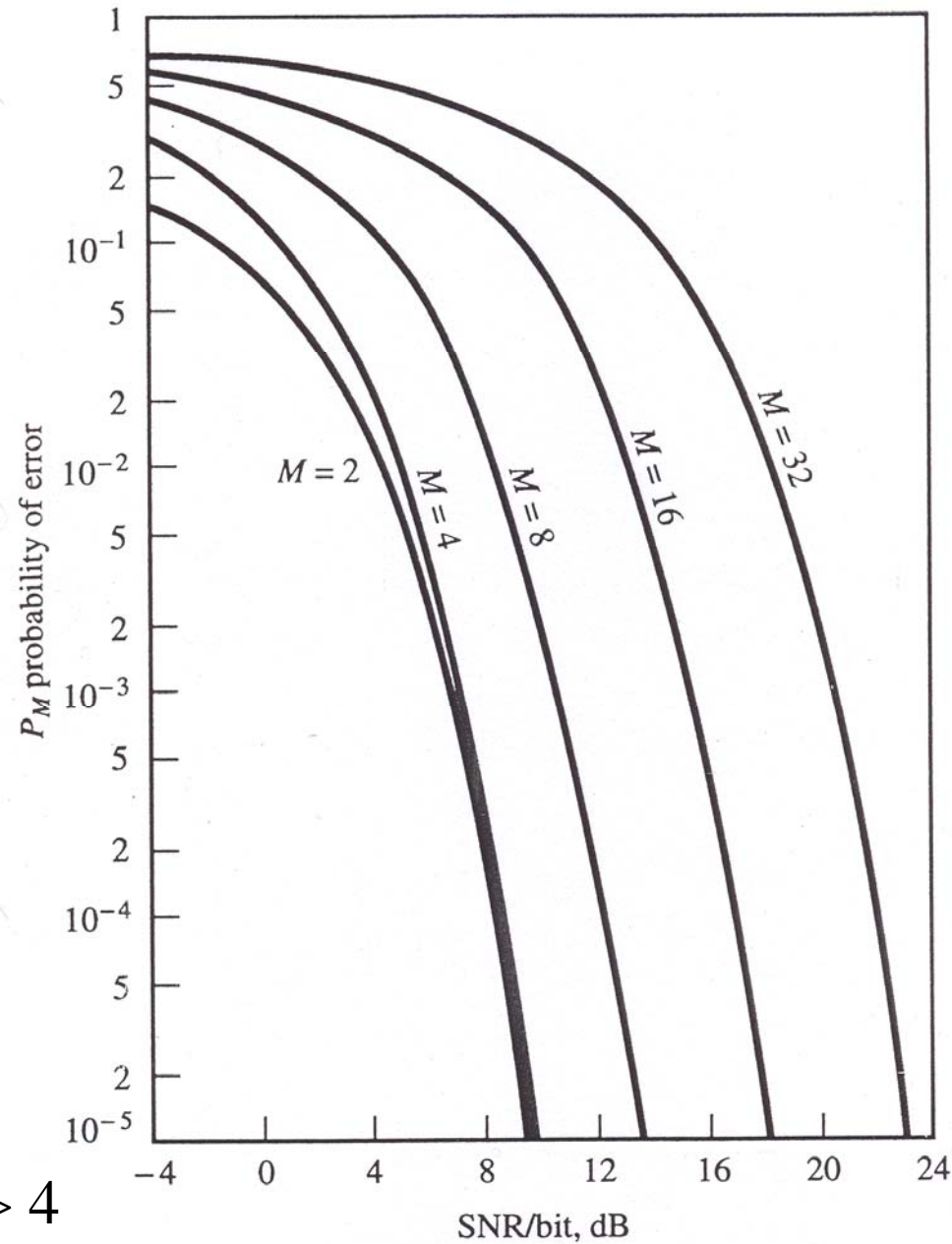
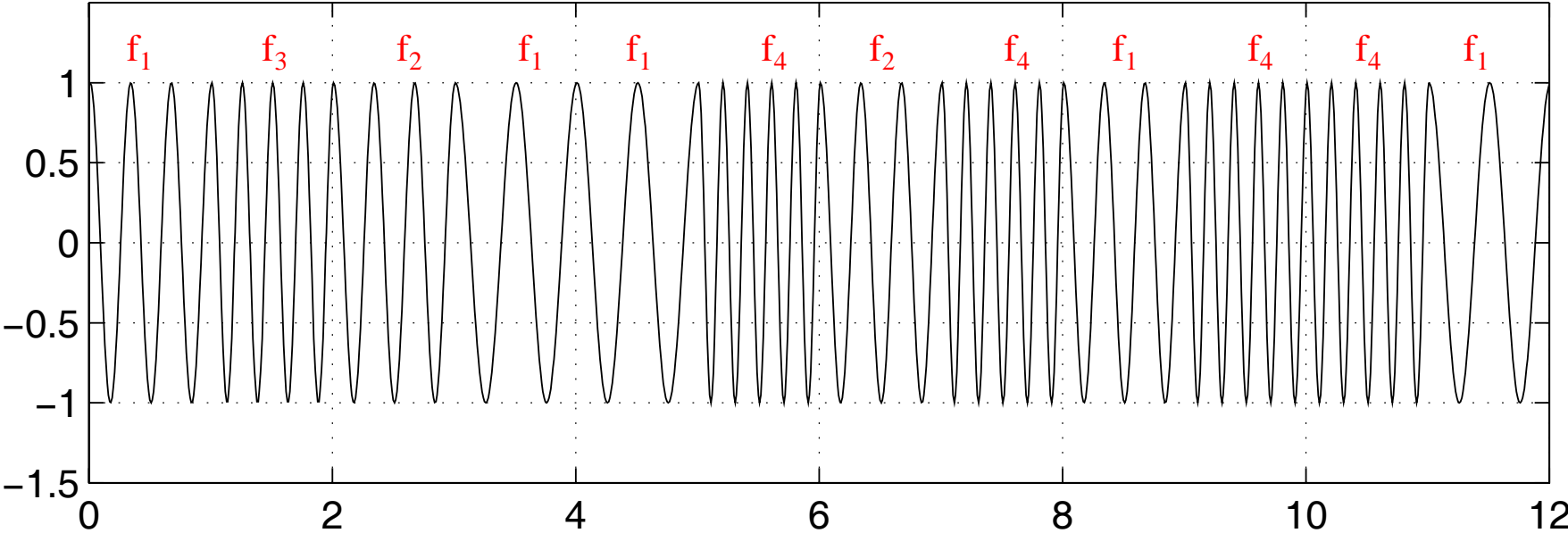


FIGURE 9.15. Probability of a symbol error for PSK signals.

4 FSK con pulsos rectangulares



Espectro de 4 FSK pulsos rectangulares

