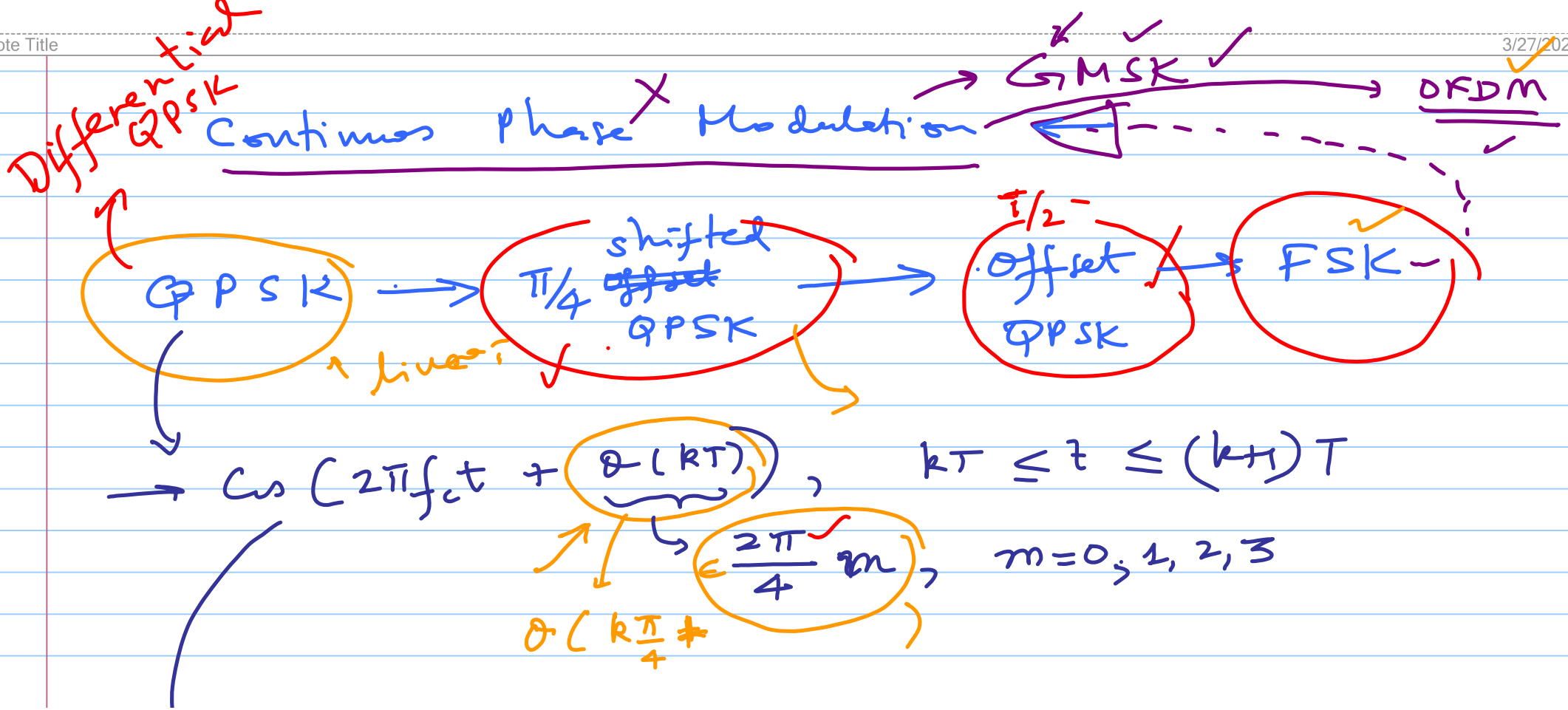
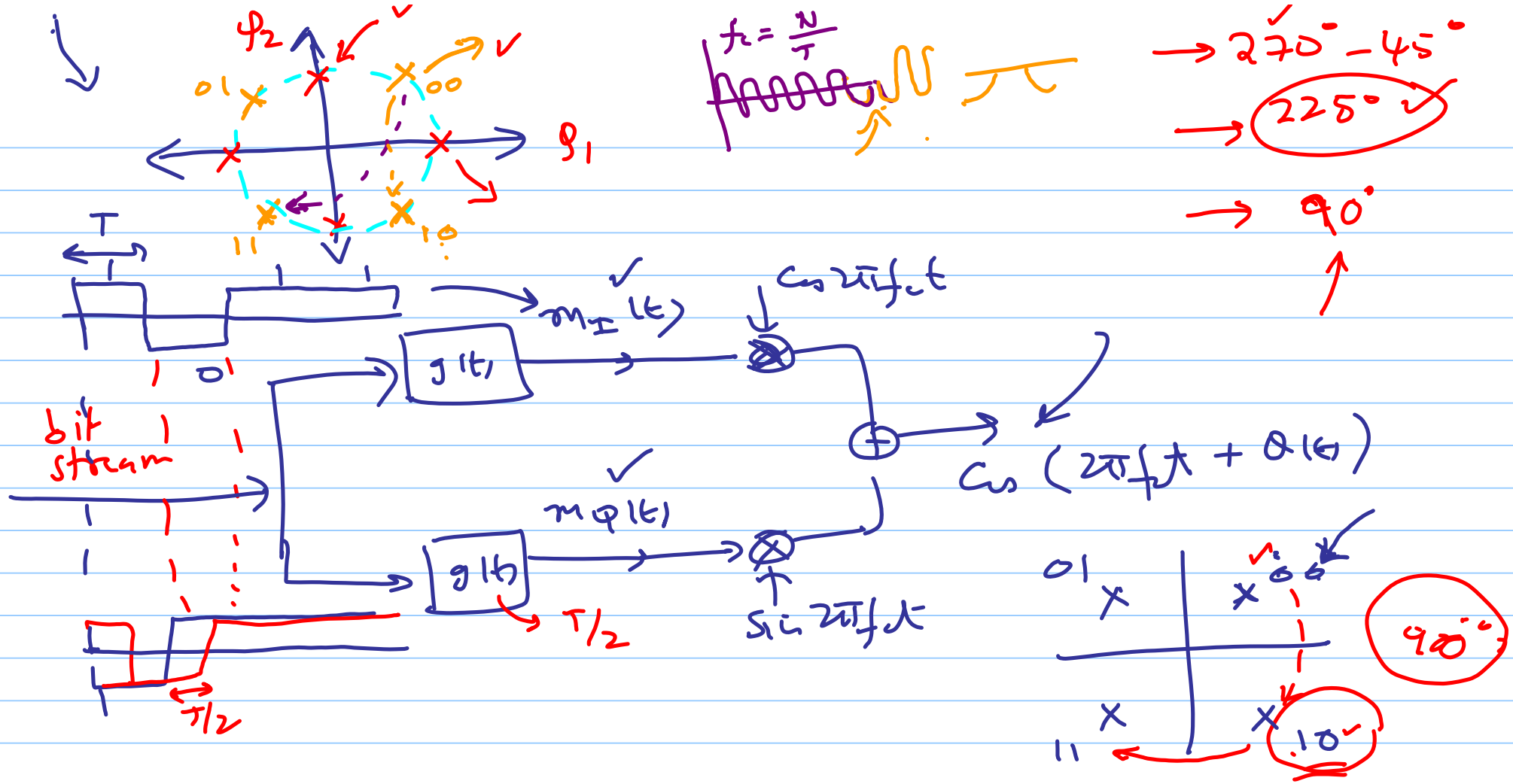
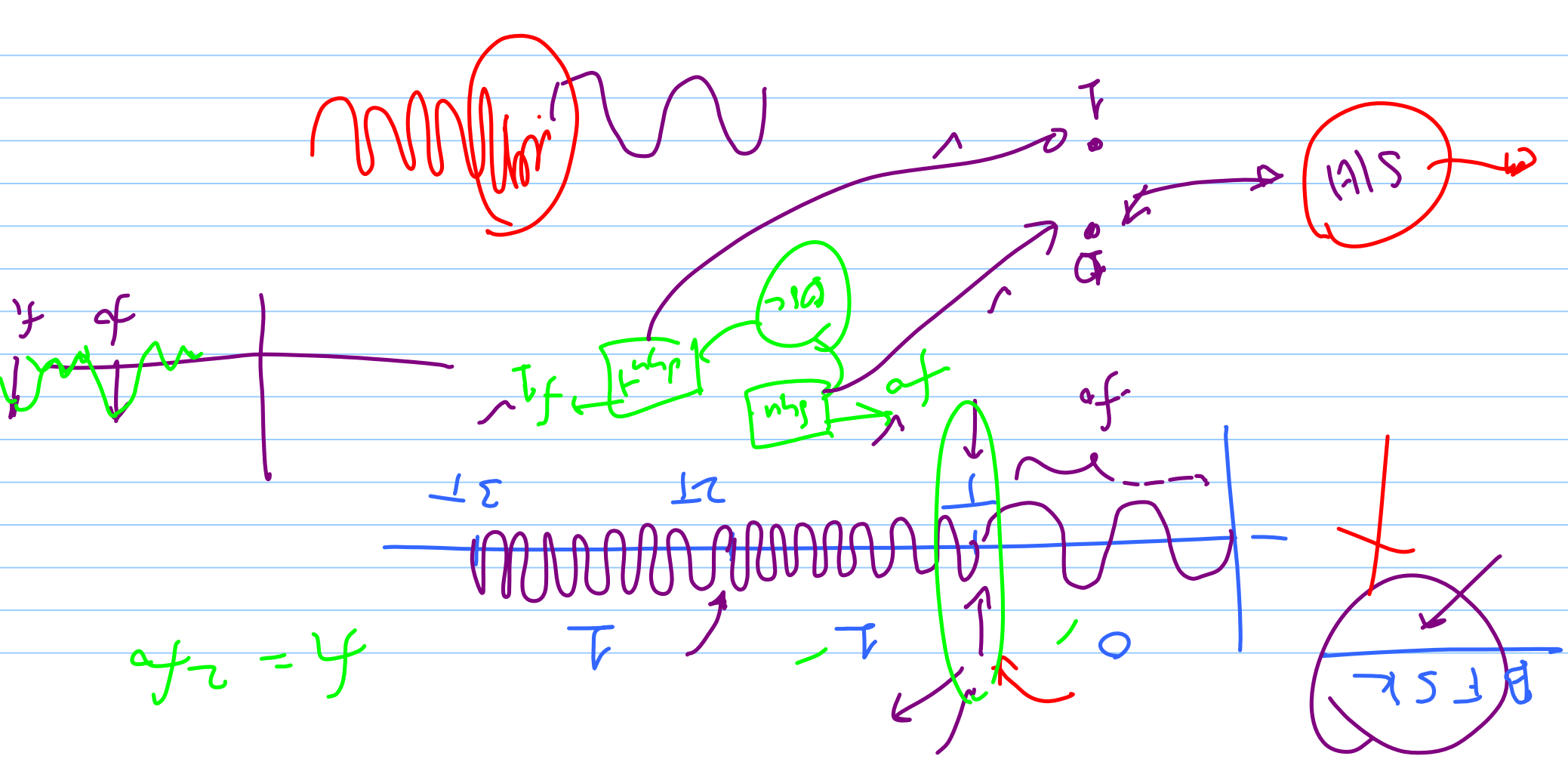
Note Title 3/27/2020



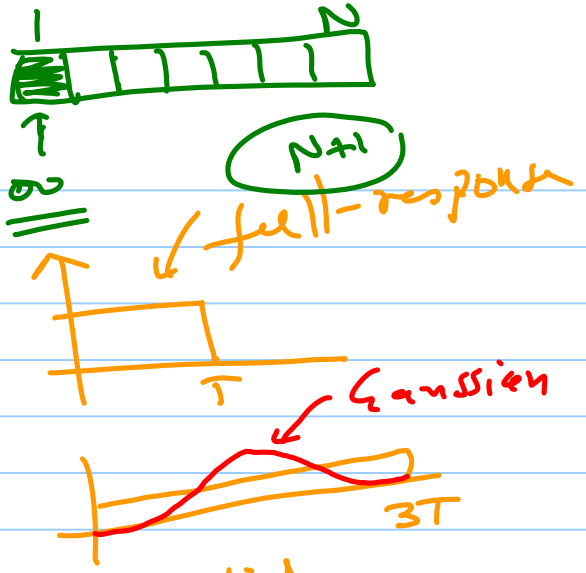

ϕ_2
01
00
11
10
ϕ_1
T
01
bit stream
g(t)
g(t)
T/2
T/2
$m_I(t)$
$m_Q(t)$
$\cos 2\pi f_c t$
$\sin 2\pi f_c t$
$\cos(2\pi f_c t + \theta(t))$
$f_c = \frac{N}{T}$
270° - 45°
225°
90°
01
00
11
10
90°



$$s(t) = \cos\left(2\pi f_c t + \theta(t)\right)$$

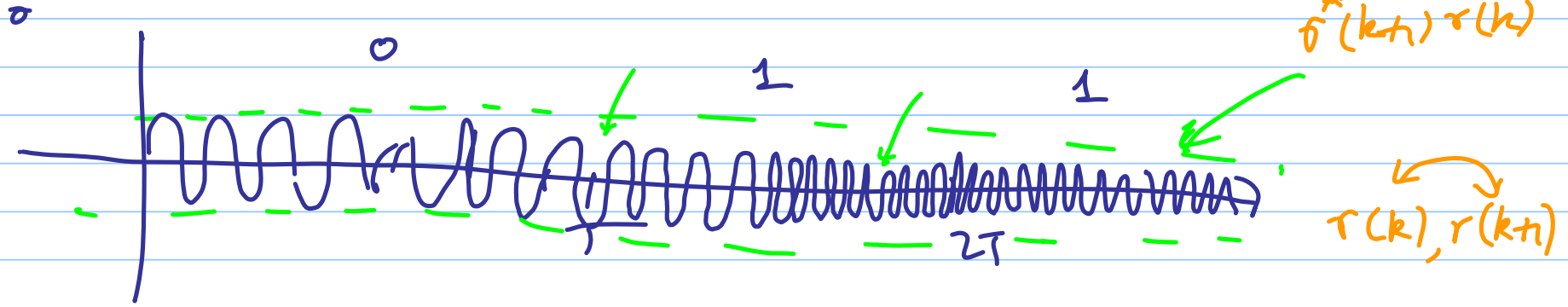
$$\theta(t) = \int_{-\infty}^{t} 2\pi k_f\, m(\tau)\, d\tau$$

$$m(t) = \sum_{k} I(k)\, g(t - kT)$$



partial response

$g^{*}(k+1)\, r(k)$



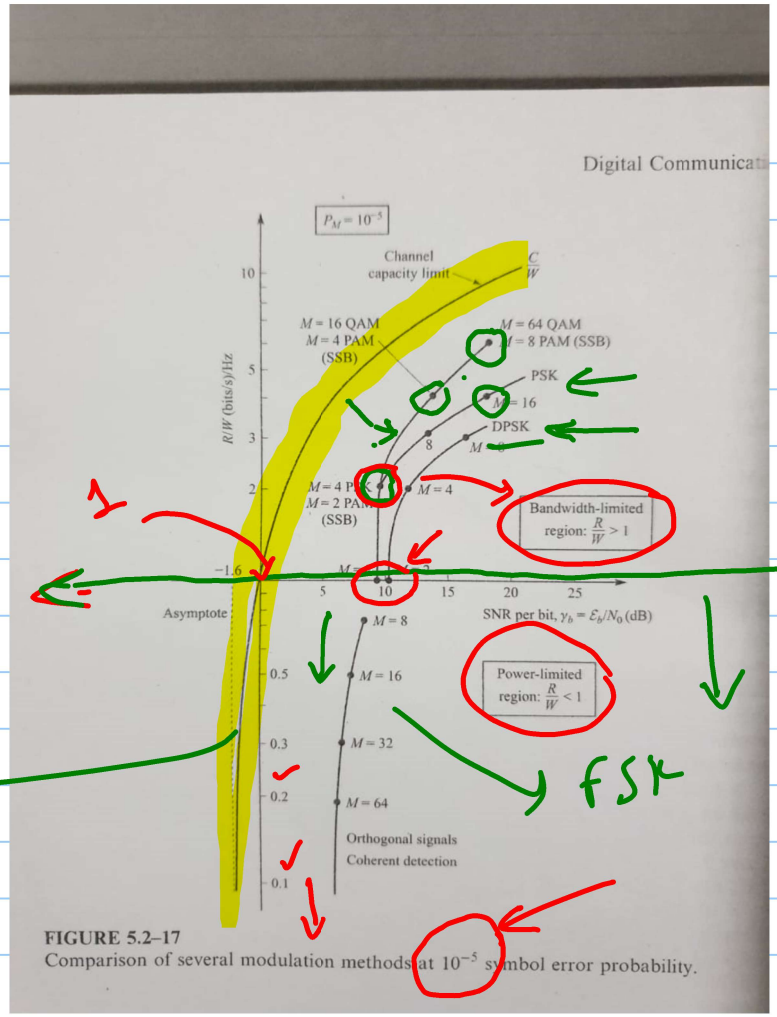
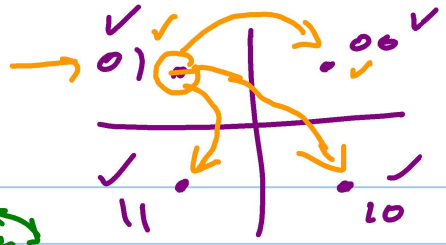


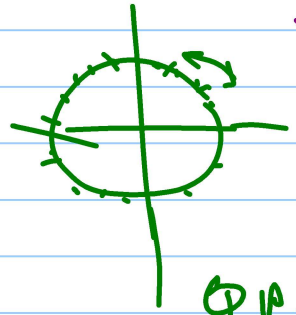
FIGURE 5.2–17
Comparison of several modulation methods at 10^{-5} symbol error probability.

$\frac{E_s}{N_0}$ $\frac{R}{W} = 1$

$C = W \log_2(1 + SNR)$

$\frac{C}{W} = \log_2(1 + SNR)$ $\frac{E_b}{N_0}$





QPSK
BPSK