HW 7

1. a. $B_m = 100\ Hz$

   $F_s = 2B_m = 200\ Hz$

   b. $F_s = 250\ Hz$

   $B_m = \dfrac{F_s}{2} = 125\ Hz$

2. $x_a(t) = \sin(240 \cdot 2\pi t) + 3\sin(360 \cdot 2\pi t)$

   $F_s = 600\ Hz$

   $B_m = 360\ Hz$

   a. $F_s = 2B_m = 720\ Hz$

   b. $B_m = \dfrac{F_s}{2} = 300\ Hz$

   $\Omega_H = 2\pi B_m = 600\pi\ rad$

4. a. $X(\omega) = \dfrac{1}{1 - 0.9e^{-j\omega}}$

   b. $X_D(\omega) = \dfrac{1}{3}\left(\dfrac{1}{1 - 0.9e^{-j\omega/3}}\right)$