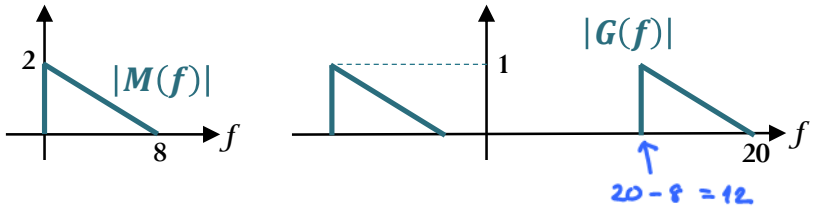
ECS 332: In-Class Exercise # 4

Instructions

1. Separate into groups of no more than three persons.
   The group cannot be the same as any of your former groups.
2. **"ENRPr"** = Explanation is not required for this problem.
   "ENRPa" = Explanation is not required for this part.
3. **Do not panic.**

Date: **05** / **09** / 2018			
Name	ID (last 3 digits)		
Prapun	**5**	**5**	**5**

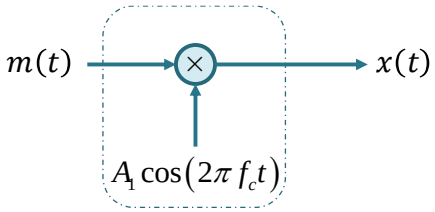
1. [ENRPr] Consider two signals $m(t)$ and $g(t)$.
   The magnitude plots of their Fourier transforms are shown below.



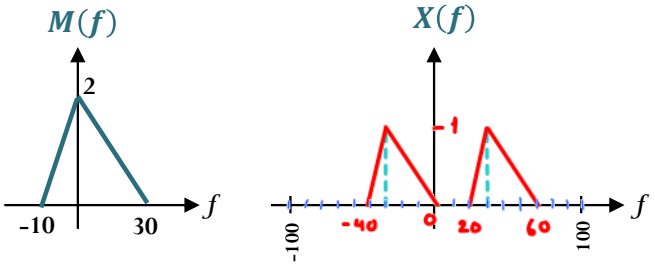
In the time domain, suppose $g(t)=c_1 m(t)\cos(c_2 t)$ for some positive constants c_1 and c_2.

Find the values of the constants c_1 and c_2: $c_1 =$ 1 , $c_2 =$ $2\pi \times 12 = 24\pi$

2. [ENRPr] Consider a modulator below.



   a. Suppose $A_1 = 1$, f_c = 30 Hz, and the Fourier transform of the message is as plotted below.
   Plot $X(f)$ in the corresponding space below.



   b. Suppose $A_1 = 1$, $f_c = 1$ Hz, and the message $m(t)$ is as plotted below.
   Sketch $x(t)$ from time $t = 0$ to time $t = 4$ in corresponding space below.