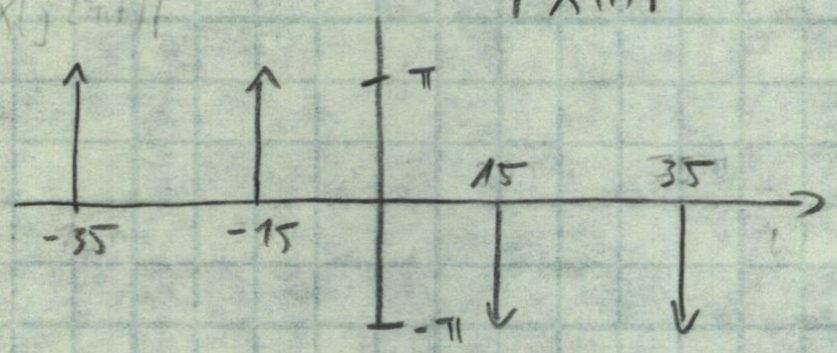
6.64 $x(t) = \sin(30\pi t) + \sin(70\pi t)$ $\quad f_s = 50$ Hz

$$|H_I(j2\pi f)| = \begin{cases} 1 & |f| \leq 25\,\text{Hz} \\ 0 & |f| > 25\,\text{Hz} \end{cases}$$

$$X_s = f_s \sum_{k=-\infty}^{\infty} X(j2\pi(f - kf_s))$$

$$X(f) = \frac{j}{2}\left[\delta(f+15) - \delta(f-15) + \delta(f+35) - \delta(f-35)\right]$$

$|X(f)|$



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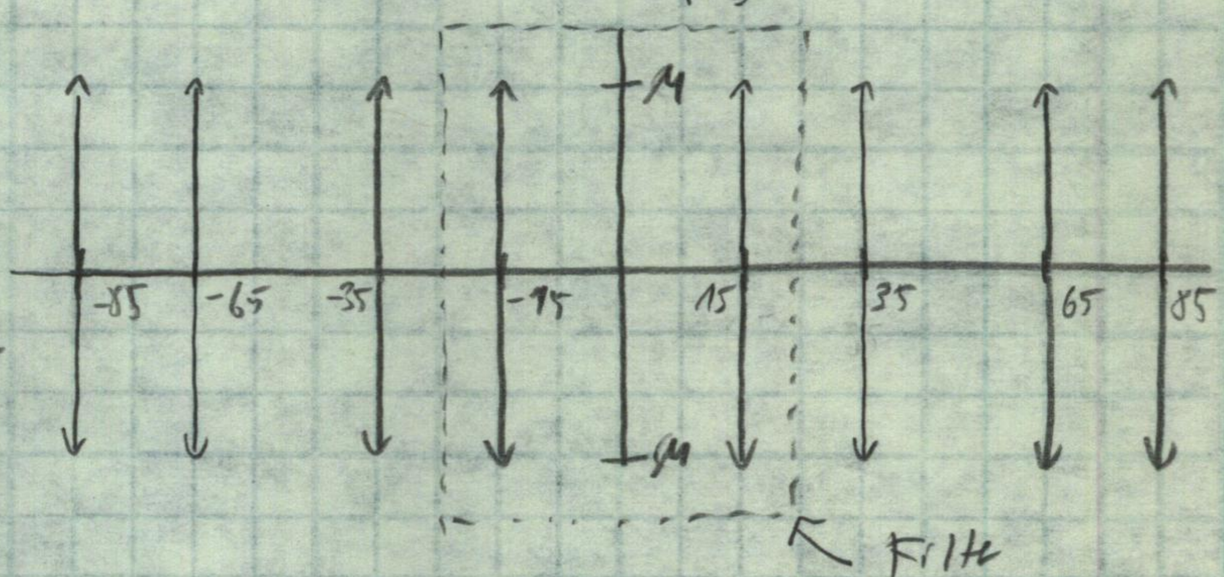
$$X_s(f) = \frac{50j}{2}\sum_{k=-\infty}^{\infty} \delta(f - 50k + 15) - \delta(f - 50k - 15) + \delta(f - 50k + 35) - \delta(f - 50k - 35)$$

$k=0$	$-15, -35$	$15, 35$
$k=1$	$-35, 15$	$65, 85$
$k=-1$	$-65, -85$	$-35, -15$
$k=2$	$85, 65$	$115, 135$
$k=-2$	...	...

$|X_s(f)|$



$$\Rightarrow Y(f) = M\left[\delta(f-15) + \delta(f+15) - \delta(f-15) - \delta(f+15)\right]$$

$= 0$ ✓

$|Y(f)|$