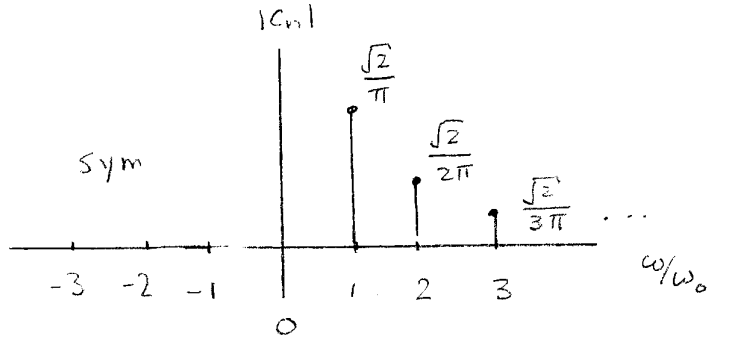
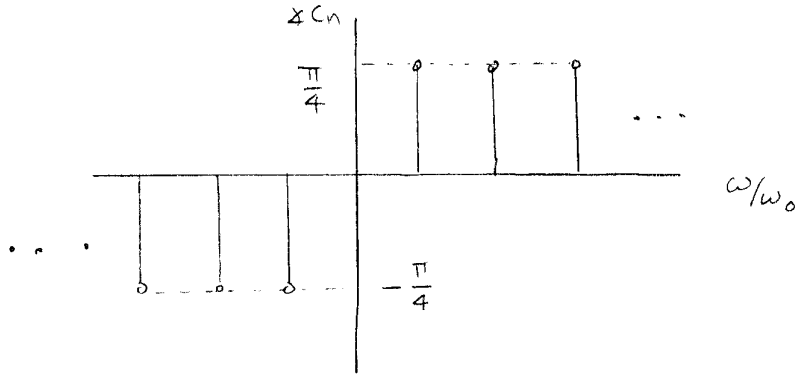
Winter Quater 2001 Final Exam, Prob # 2

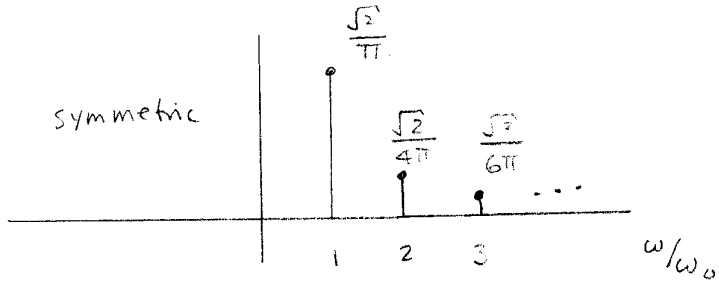
$$f_{in}(t) = \sum_{n=-\infty}^{\infty} c_n e^{jn\omega_0 t}, \qquad c_n = \begin{cases} 1, & n = 0 \\ \frac{1}{n\pi}(1+j), & n > 0 \end{cases}$$

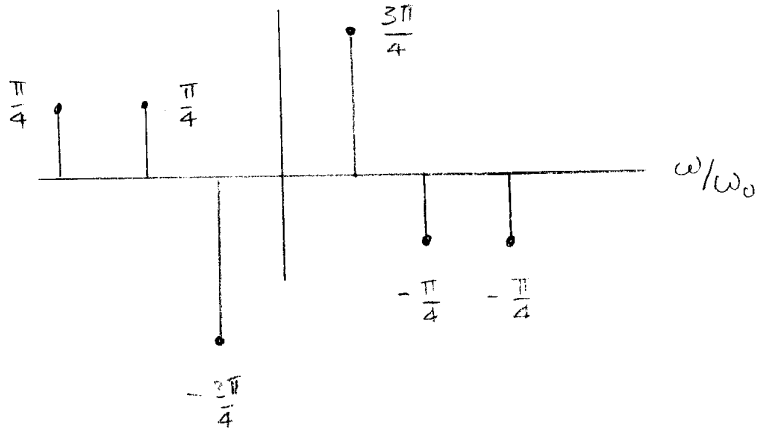
(a)





(b)





(c) NO phase is NOT the same for input and output.

When $\omega_c \gg \omega_0$ OR $\omega_c < \omega_0$, the input and output will be proportional to each other.