

Solution

$T_0 = 2$ so $\omega_0 = \pi$, so the harmonics of $x(t)$ are at multiples of π . All frequency components above $\pi/2$ are eliminated by this filter, so only the DC component passes through. $c_0 = 1/2$. Thus

$$y(t) = c_0 H(0) = 3/2.$$

$H(\omega)$ and $H(j\omega)$ are interchangeable notation

$$H(\omega) = H(j\omega) = \int_{-\infty}^{\infty} h(t) e^{-j\omega t} dt$$