

Name:

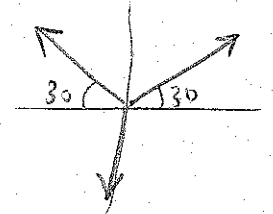
key

ID:

1) Simplify the following to the simplest form:

a)  $[e^{-t} \cos(3t - 60^\circ)]\delta(t) = \cos(-60) = \cos(60) \delta(t)$

b)  $\cos(\omega t + 30^\circ) + \cos(\omega t + 150^\circ) + \cos(\omega t - 90^\circ) \Rightarrow 1 \angle 30^\circ + 1 \angle 150^\circ + 1 \angle -90^\circ = 0$



2) Evaluate the following integrals

a)  $\int_{-\infty}^{\infty} \sin(\pi t) \delta(2t - 3) dt = \int \sin(\pi t) \delta(2(t - \frac{3}{2})) dt = \frac{1}{2} \int \sin(\pi t) \delta(t - \frac{3}{2}) dt = \frac{1}{2} \sin(\frac{3\pi}{2})$

b)  $\int_{-\infty}^{\infty} [e^{-3t} + \cos(2\pi t)] \delta(t) dt$

$= (-1) \frac{d}{dt} [e^{-3t} + \cos(2\pi t)] \Big|_{t=0}$

$= 3e^{-3t} + 2\pi \sin(2\pi t) \Big|_{t=0}$

$= 3$

Quiz(1) - (B)

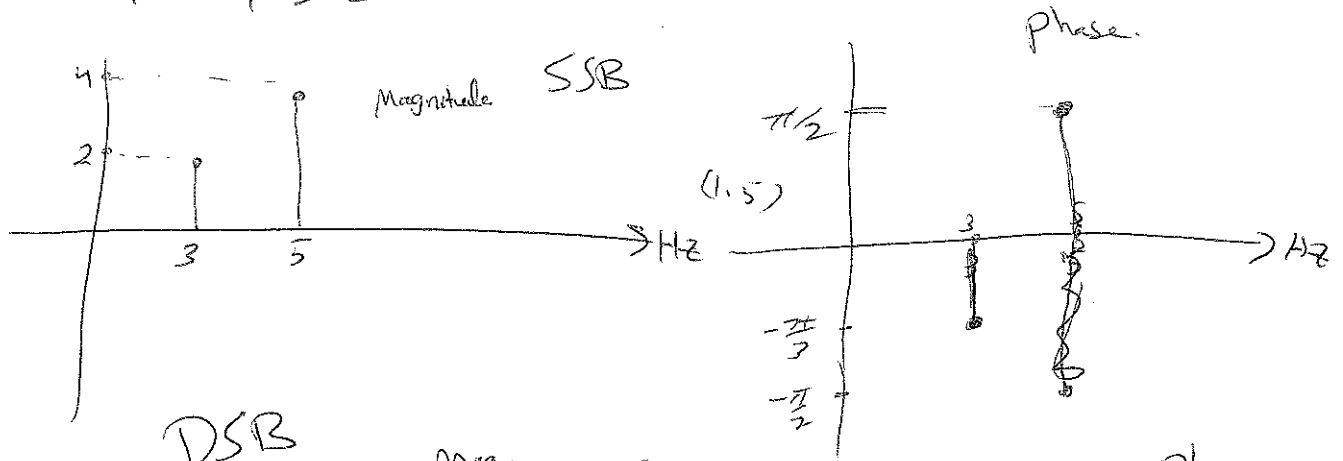
1)  $T_1 = \frac{2\pi}{6\pi} = \frac{1}{3}$

$T_2 = \frac{2\pi}{10\pi} = \frac{1}{5}$

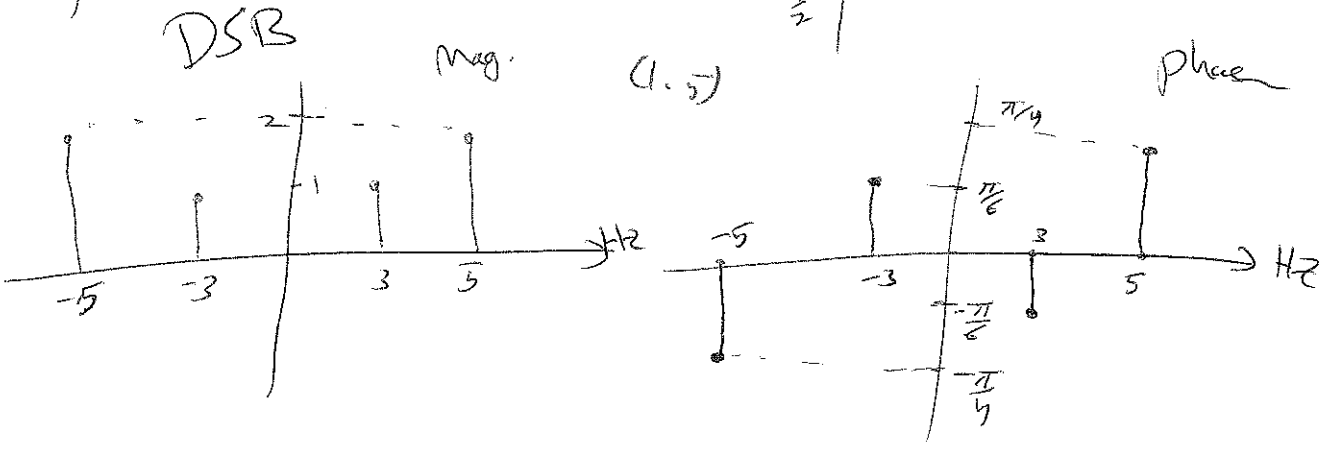
(1)  $\frac{T_1}{T_2} = \frac{5}{3}$  rational no.  $\Rightarrow$  so  $x(t)$  is periodic

(1)  $T_0 = 3T_1 = 1 \text{ sec}$

2)



(1.5)  
3



(2)

4)  $P = \frac{(4)^2}{2} = 8 \text{ watt.}$

5 to 15 Hz