Definition

1. $\delta(t) = 0 \quad t \neq 0$

$$\int_{-\infty}^{\infty} \delta(t)\, dt = 1$$

2. The Fourier transform of $g(t)$ is

$$G(f) = \int_{-\infty}^{\infty} g(t)\, e^{-j2\pi f t}\, dt$$

3. For the Fourier transform pair

$g(t) \overset{\mathcal{F}}{\Longleftrightarrow} G(f)$,

$g(t-t_0) \overset{\mathcal{F}}{\Longleftrightarrow} G(f)\, e^{-j2\pi f t_0}$

$G(t) \overset{\mathcal{F}}{\Longleftrightarrow} g(-f)$

Problem:

1. $\delta(t) \overset{\mathcal{F}}{\Longleftrightarrow} ?$
2. $e^{j2\pi f_c t} \overset{\mathcal{F}}{\Longleftrightarrow} ?$
3. $\cos 2\pi f_c t \overset{\mathcal{F}}{\Longleftrightarrow} ?$