Fourier series and transforms - Check your understanding

□ Is the Fourier series of f evaluated at point x always equal to $f(x)$? Why or why not?

□ What is the Gibbs phenomenon?

□ Are there functions which do not have a Fourier series? If so, give an example.

□ If the forcing applied to an oscillator is not sinusoidal, is it possible to have a resonance? Why or why not?

□ If f is a function of x, $\mathcal{F}$ denotes the Fourier transform, and $\mathcal{F}^{-1}$ the inverse Fourier transform, is it always true that $\mathcal{F}^{-1}[\mathcal{F}(f)](x) = f(x)$? Why or why not?

□ Is the Fourier transform a linear transformation? Why or why not?

□ If you are asked to find either the Fourier series or the Fourier transform of a given function f, how do you decide which transform to write?