

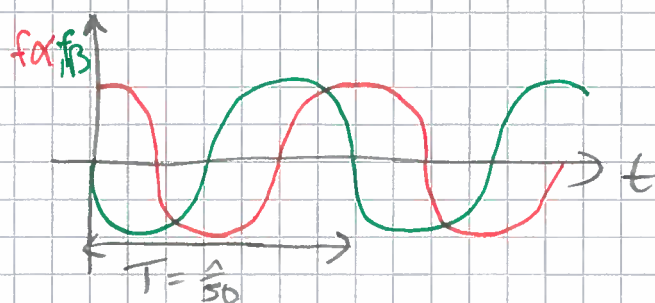
①

Re-exam 22<sup>nd</sup> Feb 13Problem 1:

$$1) \quad \bar{f} = e^{-j\omega t} = \cos(\omega t) - j \sin(\omega t)$$

$$f_a = \operatorname{Re}(\bar{f}) = \cos(\omega t)$$

$$f_b = \operatorname{Im}(\bar{f}) = -\sin(\omega t)$$



$$2) \quad f_{a0} = \operatorname{Re}\left(\frac{\bar{f}}{e^{j0}}\right) = \operatorname{Re}(e^{-j\omega t}) = \cos(\omega t)$$

$$f_{b0} = \operatorname{Re}\left(\frac{\bar{f}}{e^{j120^\circ}}\right) = \operatorname{Re}(e^{-j(\omega t + 120^\circ)}) = \cos(\omega t + 120^\circ)$$

$$f_{c0} = \operatorname{Re}\left(\frac{\bar{f}}{e^{j240^\circ}}\right) = \operatorname{Re}(e^{-j(\omega t - 120^\circ)}) = \cos(\omega t - 120^\circ)$$

In balanced systems:

$$f_a = f_{a0}$$

$$f_b = f_{b0}$$

$$f_c = f_{c0}$$

