

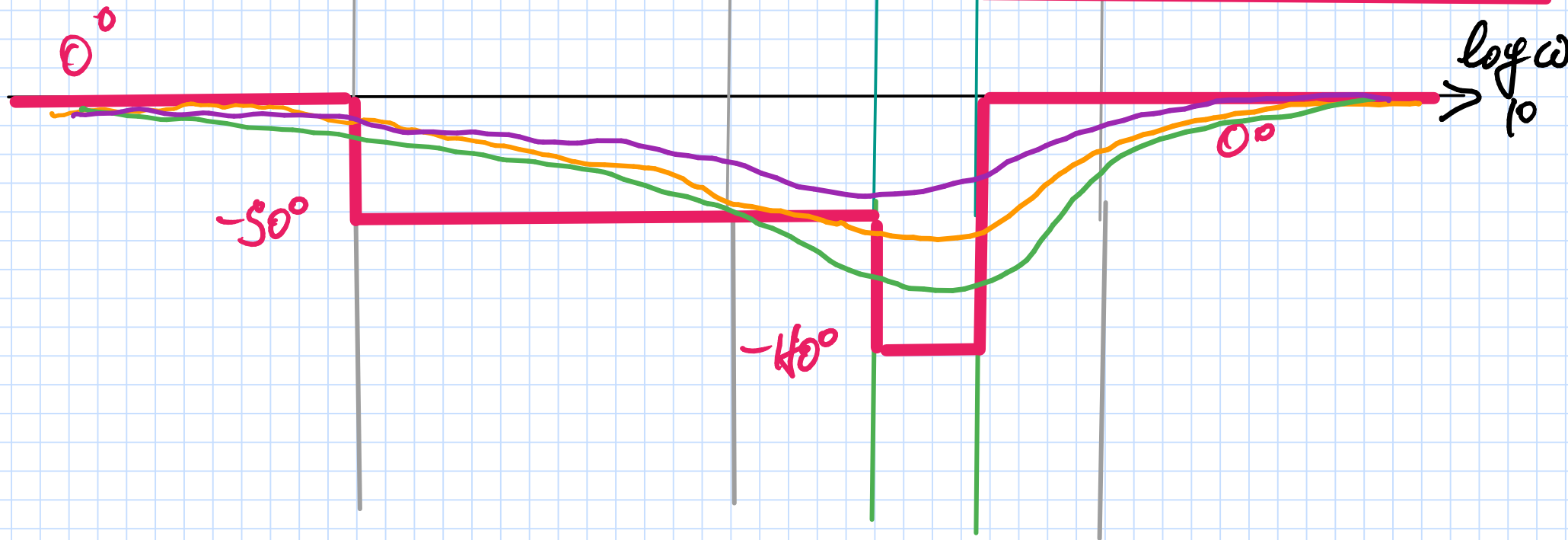
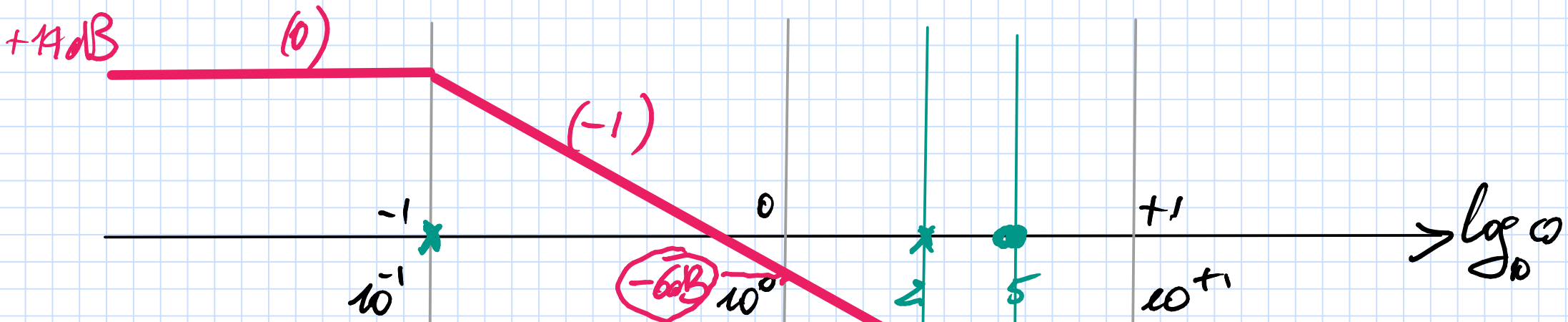
$$L(s) = \frac{5 \left(1 + \frac{s}{5}\right)^2}{(1+10s)(1+\frac{s}{2})}$$

⊙ diagrammi asintotici di Bode

⊙ diagramma pole

$$\mu_L = 5 \rightarrow \mu_{dB} \approx 14 \text{ dB}$$

$$p_2 = -5$$
$$p_1 = -\frac{1}{10} \quad p_2 = -2$$



$$\omega = 0$$

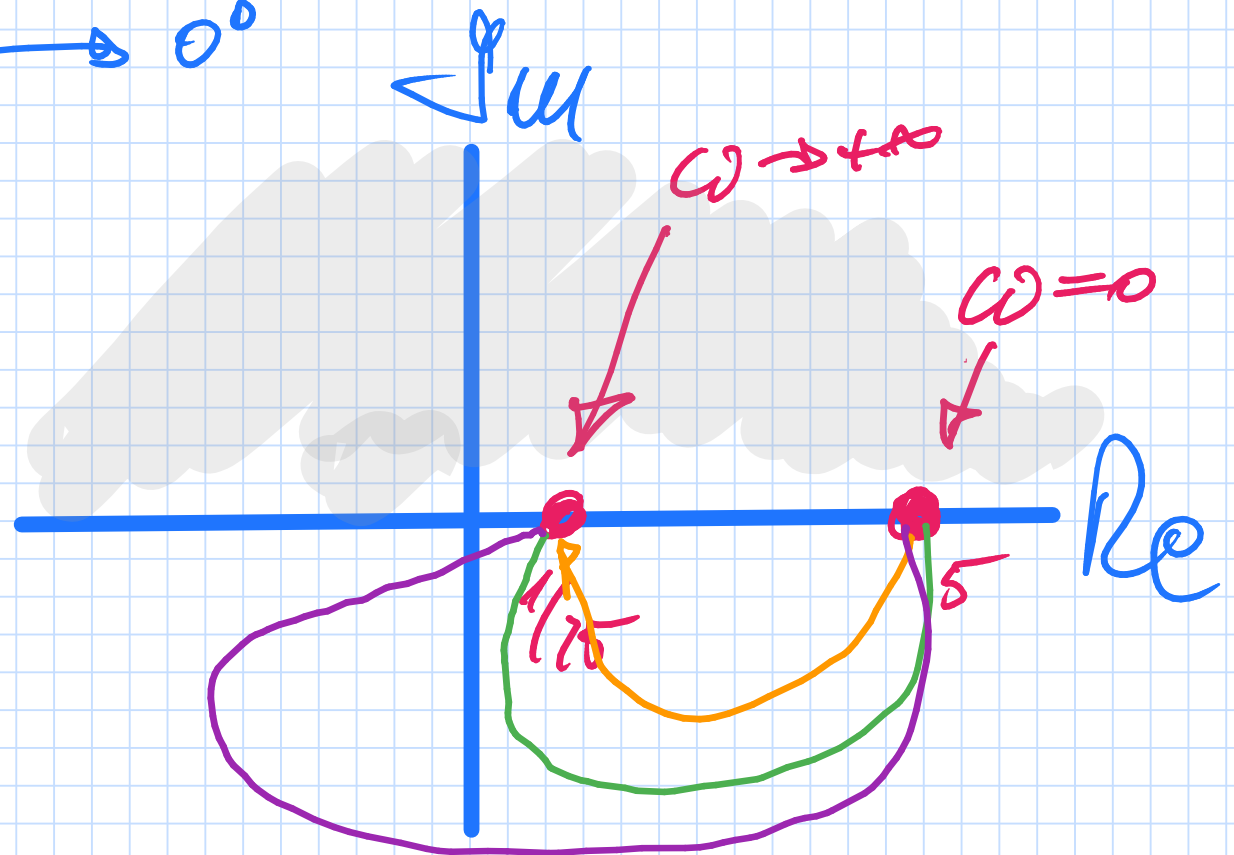
$$|L(j\omega)| = 5$$
$$\angle L(j\omega) = 0^\circ$$

$$\vec{P}_1 (5, 0^\circ)$$

$$\omega \rightarrow +\infty$$

$$|L(j\omega)| \rightarrow \frac{1}{25}$$
$$\angle L(j\omega) \rightarrow 0^\circ$$

$$\vec{P}_2 \left(\frac{1}{25}, 0^\circ \right)$$



$$L(j\omega) = \frac{a+jb}{c+jd} = \left[\frac{ac+bd}{c^2+d^2} \right] + j \left[\frac{bc-ad}{c^2+d^2} \right]$$

$\text{Re}()$
 $\text{Im}()$

$$L(j\omega) = 5 \cdot \frac{\left[\left(1 - \frac{\omega^2}{15}\right) + \frac{2}{5}j\omega \right]}{\left[\left(1 - 5\omega^2\right) + \frac{21}{2}j\omega \right]}$$

$$\text{Re}() = 5 \cdot \frac{\frac{\omega^4}{5} - \frac{21}{25}\omega^2 + 1}{\left(1 - 5\omega^2\right)^2 + \frac{441}{4}\omega^2}$$

$$\text{Im}() = -5\omega \frac{\frac{73}{50}\omega^2 + \frac{101}{10}}{\left(1 - 5\omega^2\right)^2 + \frac{441}{4}\omega^2}$$

$$\operatorname{Re}(\cdot) = 5 \cdot \frac{\frac{\omega^4}{5} - \frac{21}{25}\omega^2 + 1}{(1-5\omega^2)^2 + \frac{441}{4}\omega^2}$$

$$\omega^2 \triangleq t$$

$$\frac{t^2}{5} - \frac{21}{25}t + 1 \geq 0 \quad \forall t > 0$$

$$\Delta = \sqrt{441 - 500} < 0$$

$$\operatorname{Im}(\cdot) = -5\omega \frac{\frac{73}{50}\omega^2 + \frac{101}{10}}{(1-5\omega^2)^2 + \frac{441}{4}\omega^2}$$

$$< 0 \quad \forall \omega > 0$$

$$= 0 \quad \text{für } \omega = 0$$

