

## Type 2: $(j\omega\tau + 1)^{-1}$

This is a stable real pole.

Magnitude:

$$\log \left| \frac{1}{j\omega\tau + 1} \right| = -\log |j\omega\tau + 1|$$

Phase:

$$\angle \frac{1}{j\omega\tau + 1} = -\angle(j\omega\tau + 1)$$

So the magnitude and phase plots for a stable real pole are the reflections of the corresponding plots for the stable real zero w.r.t. the horizontal axis:

- ▶ step down by 1 in magnitude slope
- ▶ step down by  $90^\circ$  in phase