

Type 3:  $\left[ \left( \frac{j\omega}{\omega_n} \right)^2 + 2\zeta \frac{j\omega}{\omega_n} + 1 \right]^{-1}$

This is a stable complex pole.

Magnitude:

$$\log M = \log \left| \frac{1}{\left( \frac{j\omega}{\omega_n} \right)^2 + 2\zeta \frac{j\omega}{\omega_n} + 1} \right| = -\log \left| \left( \frac{j\omega}{\omega_n} \right)^2 + 2\zeta \frac{j\omega}{\omega_n} + 1 \right|$$

Phase:

$$\phi = \angle \frac{1}{\left( \frac{j\omega}{\omega_n} \right)^2 + 2\zeta \frac{j\omega}{\omega_n} + 1} = -\angle \left[ \left( \frac{j\omega}{\omega_n} \right)^2 + 2\zeta \frac{j\omega}{\omega_n} + 1 \right]$$