Second Order Step.

Second-Order step. These functions illustrate a common theme in engineering- the Second-Order Closed-Loop step response of a system. This loosely means how such a system responds in time to a sudden change to its input. The damping factor of this system is known as zeta (z) and the study of the variation of response with respect to zeta is instructive. The functions here are predefined with zeta set to give various responses.

z = 0.2, z = 0.5. Both of these are underdamped cases. The system responds quickly but overshoots, taking a long time to settle.

z = 0.7. Although underdamped, this response is usually the one that engineers, etc. aim for in a system as it is often the best compromise between response time and settling time.

z = 1.0. The critically damped case. No overshoot occurs.

z = 2.0. The overdamped case. No overshoot occurs but the system is sluggish and takes a long time to reach its final value.