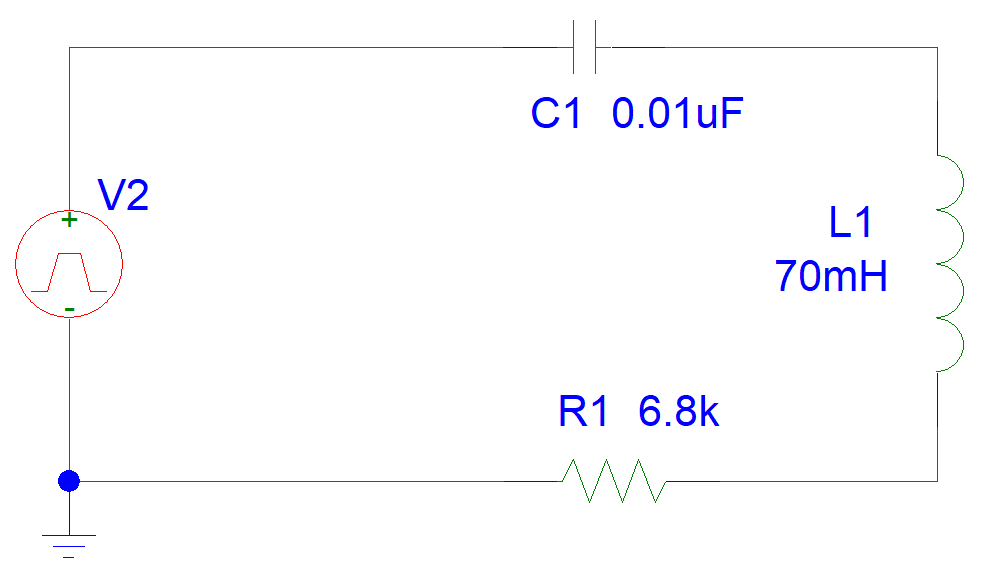
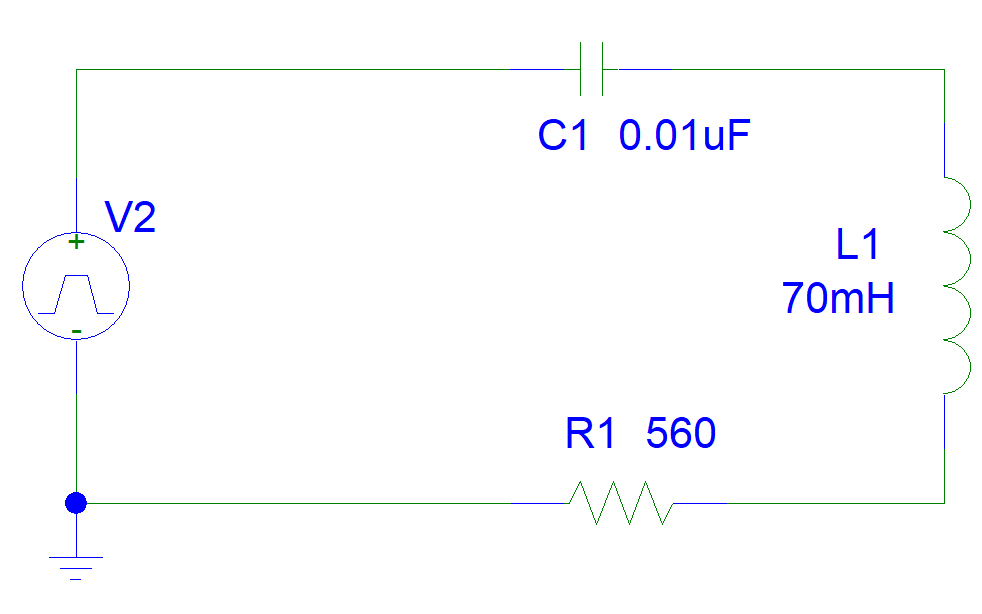
|  |  |  |
| --- | --- | --- |
|  |  | KVL |
|  |  | EQ 1.1 |
|  |  | Take Derivative. |
|  |  |  |
|  |  | EQ 1.2 |
|  |  |  |
|  |  | EQ 1.3 |
|  |  |  |
|  |  | Because right side of ‘=’ is constant 0. |
|  |  |  |
|  |  | Differential Equations. (DE) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | EQ 1.4 |
|  |  |  |
|  |  | Quadratic Equation. |
|  |  |  |
|  | | |
|  |  |  |
|  |  | “Critical Damping” |
|  |  |  |
|  |  | “Over-Damped’ |
|  |  |  |
|  |  | “Under-Damped” |
|  |  |  |
|  |  | “Un-Damped” |
|  |  |  |
|  |  |  |
|  | | |
|  |  |  |
|  |  | Solve in terms of V across R |

|  |  |  |
| --- | --- | --- |
|  |  | KCL |
|  |  | EQ 2.1 |
|  |  | Take Derivative. |
|  |  | EQ 2.2 |
|  |  |  |
|  |  | EQ 2.3 |
|  |  |  |
|  |  | Because right side of ‘=’ is constant 0. |
|  |  |  |
|  |  | Differential Equations. (DE) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | EQ 2.4 |
|  |  |  |
|  |  | Quadratic Equation. |
|  |  |  |
|  | | |
|  |  |  |
|  |  | “Critical Damping” |
|  |  |  |
|  |  | “Over-Damped’ |
|  |  |  |
|  |  | “Under-Damped” |
|  |  |  |
|  |  | “Un-Damped” |
|  |  |  |
|  |  |  |
|  | | |
|  |  |  |
|  |  | Solve in terms of V across L |

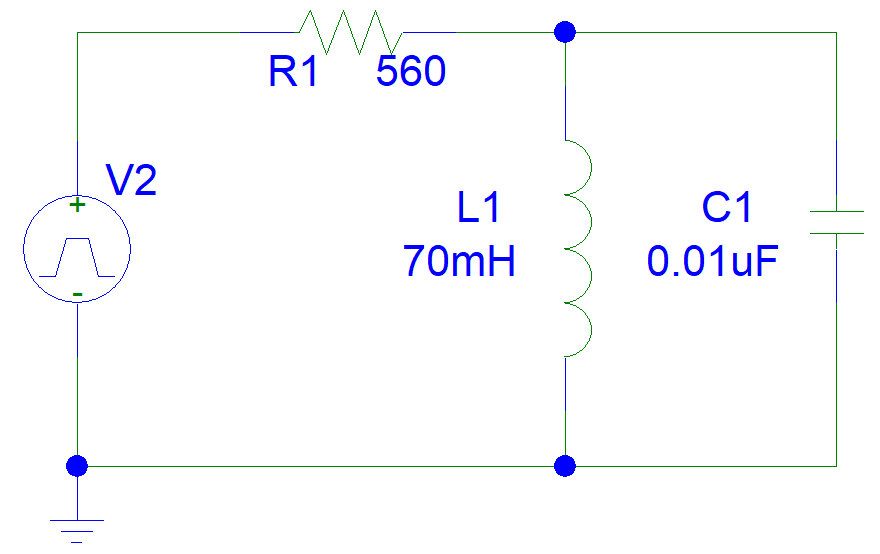




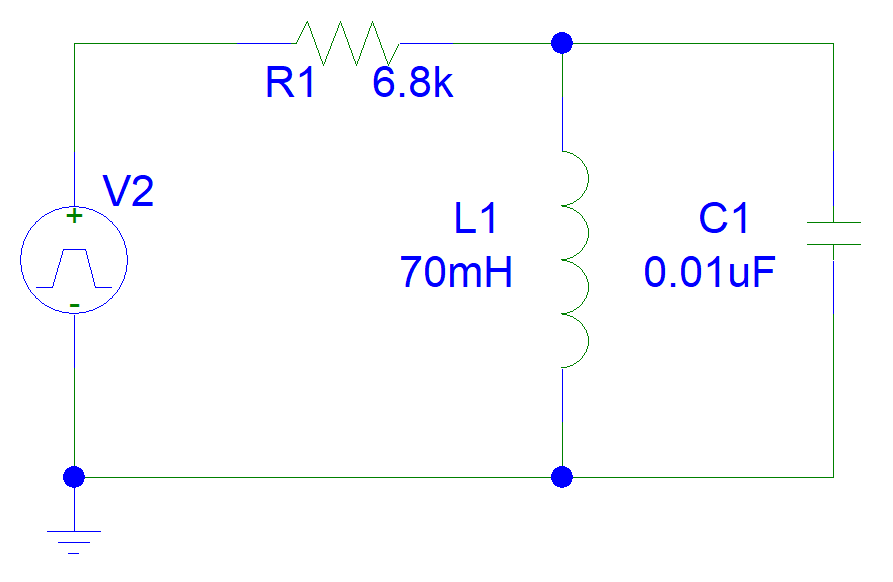


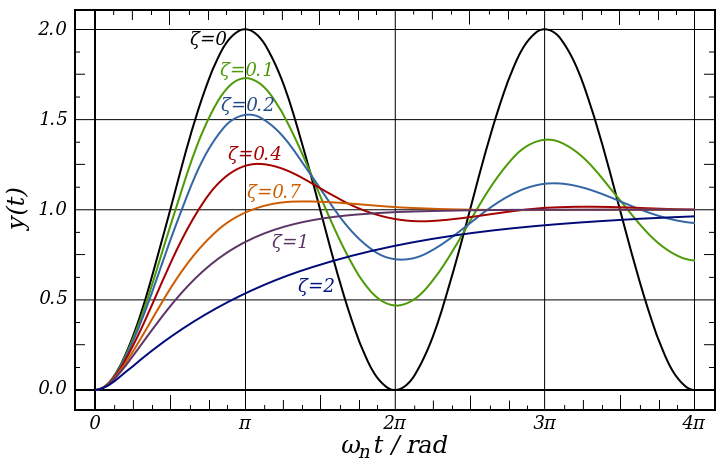












In engineering, the damping ratio is a dimensionless measure describing how oscillations in a system decay after a disturbance. Many systems exhibit oscillatory behavior when they are disturbed from their position of static equilibrium

The damping ratio is a system parameter, denoted by ζ (zeta, z), that can vary from undamped (z=0), underdamped (z<1) through critically damped (z=1) to overdamped (z>1).

Damping is caused by the resistance in the circuit. It determines whether or not the circuit will resonate naturally (that is, without a driving source). Circuits which will resonate in this way are described as underdamped and those that will not are overdamped.