

$$k := .5 \quad g := 9.8$$

$$v''_o := 3 \cdot \frac{g}{k}$$

$$v'_o := \frac{g}{k}$$

$$v_o := 0$$

$$v_g(t) := \frac{g}{k} + \left(v''_o - \frac{g}{k} \right) \cdot e^{-k \cdot t}$$

$$v_e(t) := \frac{g}{k} + \left(v'_o - \frac{g}{k} \right) \cdot e^{-k \cdot t}$$

$$v_l(t) := \frac{g}{k} + \left(v_o - \frac{g}{k} \right) \cdot e^{-k \cdot t}$$

