

$$a = -kv - mg$$

constant



According Newton's 2nd law: $F = ma$

$$-mg + kv = m \frac{dv}{dt}$$

$$\frac{dv}{dt} - \frac{k}{m}v = -g$$

$$v = \frac{mg}{k} + Ce^{-\frac{k}{m}t}$$

reach constant
final velocity