Convolution of two discrete-time signals $x[n]$ and $v[n]$ is defined as

$$x[n] * v[n] = \sum_{i=-\infty}^{\infty} x[i]v[n-i]$$

Convolution of two continuous-time signals $x(t)$ and $v(t)$ is defined as:

$$x(t) * v(t) = \int_{-\infty}^{\infty} x(t)v(t-\lambda)d\lambda$$

N-point moving average (MA) filter

$$y[n] = \sum_{i=0}^{N-1} \frac{1}{N} x[n-i]$$

N-Point Exponentially Weighted Moving Average (EWMA) Filter

$$y[n] = \sum_{i=0}^{N-1} a\left(b^i x[n-i]\right)$$

Current through a capacitor:

$$i_c(t) = C\frac{dv_c(t)}{dt}$$

Voltage across an inductor:

$$v_L(t) = L\frac{di_L(t)}{dt}$$