$v = \frac{dw}{dq}$ $i = \frac{dq}{dt}$ $p(t) = v(t)i(t)$ $w = \int_{t_1}^{t_2} p(t)\,dt$ $V = R \times I$ $\Sigma I_{in} = \Sigma I_{out}$ $\Sigma V = 0$

$R_{EQ} = \sum_{n=1}^{N} R_n$ $R_{EQ} = \frac{R_1 R_2}{R_1 + R_2}$ $V_{R2} = Vi \frac{R_2}{R_1 + R_2}$ $I_{R2} = \frac{R_1}{R_1 + R_2} Ii$

$V_{med} = \frac{1}{T}\int_{t_0}^{t_0+T} v(t)dt$ $V_{ef} = V_{rms} = \sqrt{\frac{1}{T}\int_{t_0}^{t_0+T} v^2(t)dt}$ $V_{ef} = V_{rms} = \frac{V_m}{\sqrt{2}}$

$\omega = 2\pi f = 2\pi/T$ $\tau = RC$ $\tau = L/R$ $j^2 = -1$

$q_c = Cv_c$ $i_c = C\frac{dv_c}{dt}$ $v_c(t) = \frac{1}{C}\int_{t_0}^{t} i_c dt + v_c(t_0)$ $w(t) = \frac{1}{2}Cv^2(t)$ $z = a + jb$

$|z| = \sqrt{a^2 + b^2}$

$v_L = L\frac{di_L}{dt}$ $i_L(t) = \frac{1}{L}\int_{t_0}^{t} v_L dt + i_L(t_0)$ $w(t) = \frac{1}{2}Li^2(t)$ $\phi = \tan^{-1}\left(\frac{b}{a}\right)$

Circuito RC —> $v_C(t) = V_{final} - (V_{final} - V_{inicial})\, e^{-t/RC}$

$Z_C = -j\frac{1}{\omega C} = \frac{1}{j\omega C} = \frac{1}{\omega C}\ \angle{-90^\circ}$ $Z_L = j\omega L = \omega L\ \angle 90^\circ$

$f_B = \frac{1}{2\pi RC}$ $H(f) = \frac{1}{1 + j(f/f_B)}$ $H(f) = \frac{V_{out}}{V_{in}} = \frac{j(f/f_B)}{1 + j(f/f_B)}$ $|H(f)|_{dB} = 20\log|H(f)|$

$Vr = I_{Lmed}\, T/C$ $I_{Lmed} \approx V_{Lmed}/R_L$ $Vr = I_{Lmed}\, T/2C$

$i_D = K\left[2(v_{GS} - V_{to})v_{DS} - v_{DS}^2\right]$ $i_D = K_p[2(v_{SG} + V_{TP})v_{SD} - v_{SD}^2]$

$i_D = K(v_{GS} - V_{to})^2$ $i_D = K_p(v_{SG} + V_{TP})^2$

$A_v = \frac{v_o}{v_{in}} = -\frac{R_2}{R_1}$ $A_v = \frac{v_O}{v_I} = 1 + \frac{R_2}{R_1}$

$$
\begin{aligned}
v_{a\,max} &= (2^{n-1} + 2^{n-2} + \cdots + 2^1 + 2^0)\,\delta v \\
&= (2^n - 1)\,\delta v
\end{aligned}
$$