$$G(s) = \frac{1}{Ls + R}$$

$$G(j\omega) = \frac{1}{R + jL\omega} = \frac{1}{R + jL\omega}\frac{R - jL\omega}{R - jL\omega} = \frac{R}{R^2 + L^2\omega^2} - j\frac{L\omega}{R^2 + L^2\omega^2}$$

$$y_s = \frac{AT}{2}\Re[G(j\omega)] = \frac{AT}{2}\frac{R}{R^2 + L^2\omega^2}$$

$$y_c = \frac{AT}{2}\Im[G(j\omega)] = -\frac{AT}{2}\frac{L\omega}{R^2 + L^2\omega^2}$$

$$\frac{\sqrt{ATR - 2y_sR^2}}{\omega\sqrt{2y_s}} = L$$

$$y_c = -\frac{AT}{2}\frac{L\omega}{R^2 + L^2\omega^2}$$

$$y_c = -\frac{AT}{2}\frac{\frac{\sqrt{ATR - 2y_sR^2}}{\sqrt{2y_s}}}{\frac{ATR}{2y_s}} = -\frac{\sqrt{y_s(ATR - 2y_sR^2)}}{\sqrt{2}R}$$

$$\sqrt{2}y_cR = -\sqrt{y_s(ATR - 2y_sR^2)}$$

$$2y_c^2R^2 = -1^2\left(y_s(ATR - 2y_sR^2)\right)$$

$$2y_c^2R^2 + 2y_s^2R^2 = ATRy_s$$

$$2R(y_c^2 + y_s^2) = ATy_s$$

$$R = \frac{AT}{2}\frac{y_s}{y_c^2 + y_s^2}$$

Pro L lze použít již odvozený vztah závislý na R:

$$\frac{\sqrt{ATR - 2y_sR^2}}{\omega\sqrt{2y_s}} = L$$

Nebo popřípadě “do-odvodit”:

$$\frac{\sqrt{ATR - 2y_sR^2}}{\omega\sqrt{2y_s}} = \frac{\sqrt{R(AT - 2y_sR)}}{\omega\sqrt{2y_s}} = L$$

$$\frac{\sqrt{R(AT - 2y_sR)}}{\omega\sqrt{2y_s}} = \frac{\sqrt{\frac{AT}{2}\frac{y_s}{y_c^2 + y_s^2}\left(AT - 2y_s\frac{AT}{2}\frac{y_s}{y_c^2 + y_s^2}\right)}}{\omega\sqrt{2y_s}} = \frac{\sqrt{\frac{AT}{2}\frac{y_s}{y_c^2 + y_s^2}\left(AT - AT\frac{y_s^2}{y_c^2 + y_s^2}\right)}}{\omega\sqrt{2y_s}} =$$

$$\frac{\sqrt{\frac{AT}{2}\frac{y_s}{y_c^2 + y_s^2}\left(AT\frac{y_c^2}{y_c^2 + y_s^2}\right)}}{\omega\sqrt{2y_s}} = \frac{\sqrt{\frac{(AT)^2}{2}\frac{y_sy_c^2}{(y_c^2 + y_s^2)^2}}}{\omega\sqrt{2y_s}} = \frac{AT\frac{\sqrt{y_c^2}}{y_c^2 + y_s^2}\sqrt{\frac{y_s}{2}}}{\omega\sqrt{2y_s}} = \frac{AT}{2\omega}\frac{\sqrt{y_c^2}}{y_c^2 + y_s^2}$$

$$L = \frac{AT}{2\omega} \frac{\sqrt{y_c^2}}{y_c^2 + y_s^2}$$

Ta odmocnina mocniny je tam proto, protože odmocnina je definována jako $\sqrt{|x|}$ tak aby to číselně sedělo kvůli znaménkům. U vztahu pro R je stejný problém, ale tam je y_s kladné, takže to nemusíme řešit.

Vztahy ještě jednou pod sebou:

$$R = \frac{AT}{2} \frac{y_s}{y_c^2 + y_s^2}$$

$$L = \frac{AT}{2\omega} \frac{\sqrt{y_c^2}}{y_c^2 + y_s^2}$$