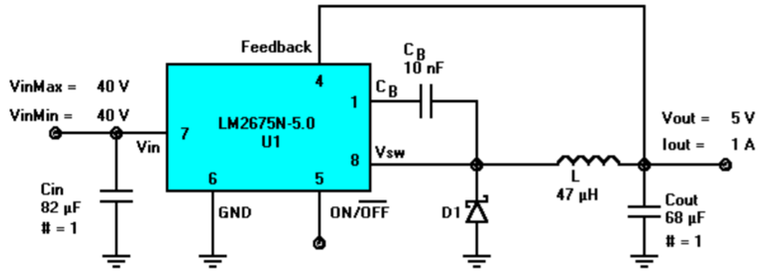
Input Filter Design

Power Supply Impdedance



$V_{in} := 40\ V$

$L_{out} := 66\ \mu H$

$I_{out} := 1\ A$

$C_{out} := 68\ \mu F$

$V_{out} := 5\ V$

$R_{Lout\_DCR} := 88\ mohm$

$ESR_{Cout} := 90\ mohm$

$Duty := 45.8\ \%$

$R_{out} := \frac{V_{out}}{I_{out}} = 5\ \Omega$

$j := [1..2000]$

$f_j := 100^{\frac{(j-200)}{500}}$

$w_j := f_j\ \frac{rad}{s}$

$s_j := 2 \cdot \pi \cdot i \cdot w_j$

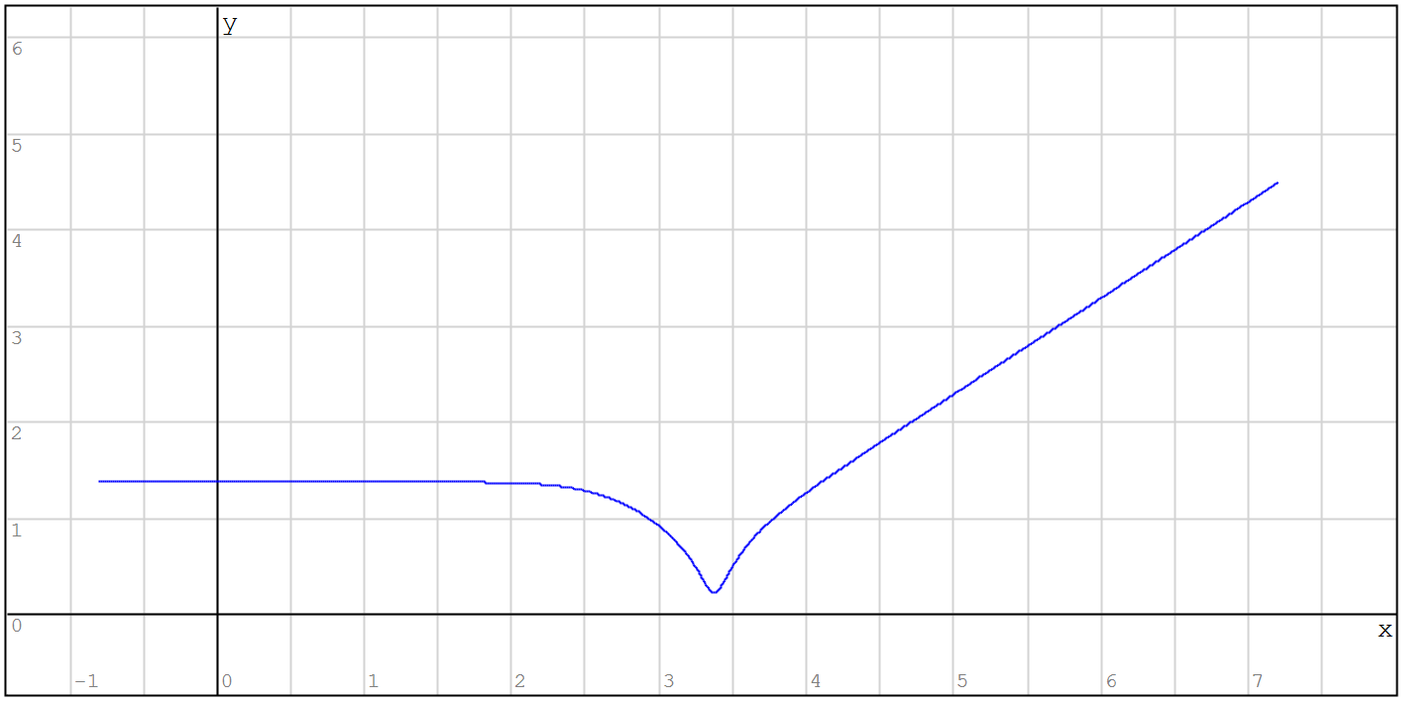
Hi. You have some issues, like the units in Co, the "i" in f instead j, and some few others.
Also, you use "det" instead "abs". You can type "abs(", it's convert to absolute value.
After correct them, you "need" to add eval() for increase the speed, and plot the logarithms (with vectorize) of the magnitudes, augmented as two column vectors

determinate

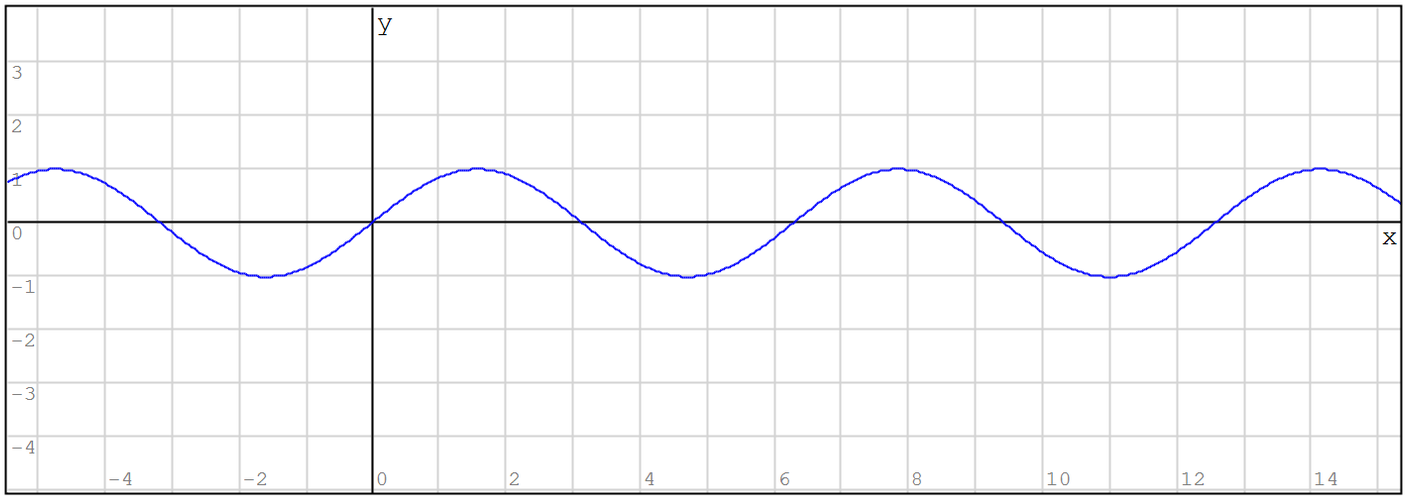
$$Z_j := \text{eval}\left(\left|\frac{\left(R_{out}+R_{Lout\_DCR}\right)}{Duty^2}\cdot\frac{\left(1+s_j\cdot\left(\frac{L_{out}}{R_{out}+R_{Lout\_DCR}}+\left(ESR_{Cout}+\frac{R_{out}\cdot R_{Lout\_DCR}}{R_{out}+R_{Lout\_DCR}}\right)\cdot C_{out}\right)+\left(s_j\right)^2\cdot L_{out}\cdot C_{out}\cdot\right.\right.\right.$$

$$\left.\left.\left.1+s_j\cdot\left(R_{out}+ESR_{Cout}\right)\cdot C_{out}\right.\right.\right.$$

$$plot := \text{eval}\left(\text{augment}\left(\overrightarrow{\log10\left(f\right)},\ \overrightarrow{\log10\left(\left|\frac{Z}{\Omega}\right|\right)}\right)\right)$$



plot



sin(x)
