A simple, approximate method for obtaining 2nd order all-pass RC values
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Begin by calculating bandwidth variable
\[ \Omega = \frac{f_1}{f_2} \] where \( f_1 \) and \( f_2 \) are lower and upper suppression band edges.

Then calculate \( \varepsilon \) from:
\[ \varepsilon = \frac{1}{2} \frac{1 - \sqrt{\Omega}}{1 + \sqrt{\Omega}} \]

Then approximate \( q \sim \varepsilon \)

and \( s = q^2 \)

Note that in the below expressions, \( s \) is the only variable that changes with bandwidth. All others are constant for any 2nd order all-pass network

\[
\begin{align*}
a_1 &= .9808 \\
a_2 &= .8315 \\
a_3 &= .5556 \\
a_4 &= .1951
\end{align*}
\]

The time constants \( \tau \) above are for a 2nd order all pass network normalized to a geometric mean frequency \( \Omega = 1 \). They may be scaled to any other frequency in Hz by dividing each \( \tau \) value by the geometric mean angular frequency \( \omega_{gm} = \left( \frac{\omega_1 \omega_2}{2} \right) \)

For example, with \( \varepsilon = .250 \) for a network where \( f_2 = 9f_1 \), as with \( f_1 = 300 \text{ Hz} \) and \( f_2 = 2700 \text{ Hz} \):

\[
\begin{align*}
\tau_{02} &= \frac{\varepsilon}{a_1 + sa_2} \\
\tau_{01} &= \frac{a_1 + sa_2}{a_2 - sa_4} \\
\tau_{12} &= \frac{1}{a_4 - sa_3} \\
\tau_{11} &= \frac{1}{a_3 - sa_1}
\end{align*}
\]

Finally, divide the time constants \( \tau \) by the capacitor value 10nF to obtain resistor values for the op-amp network:

\[
\begin{align*}
R_{02} &= 114.2k \\
R_{12} &= 10.65k \\
R_{01} &= 2.737k \\
R_{11} &= 29.35k
\end{align*}
\]

These values have been reduced to three significant figures and added to the schematic above for a practical circuit.

42 dB suppression from 300Hz to 2700Hz