

$$\begin{aligned}
& > A := (Ua - UI) / RI + (Ua - U2) / R2 + (Ua - U2) * s * C1 = 0 \\
& \qquad A := \frac{Ua - UI}{RI} + \frac{Ua - U2}{R2} + (Ua - U2) s C1 = 0 \tag{1}
\end{aligned}$$

$$\begin{aligned}
& > B := (U2 - Ua) / R2 + U2 * s * C2 = 0 \\
& \qquad B := \frac{-Ua + U2}{R2} + U2 s C2 = 0 \tag{2}
\end{aligned}$$

$$\begin{aligned}
& > solve(B, Ua) \\
& \qquad U2 (C2 R2 s + 1) \tag{3}
\end{aligned}$$

$$\begin{aligned}
& > solve(A, Ua) \\
& \qquad \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} \tag{4}
\end{aligned}$$

$$\begin{aligned}
& > C := \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} = U2 (C2 R2 s + 1) \\
& \qquad C := \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} = U2 (C2 R2 s + 1) \tag{5}
\end{aligned}$$

$$\begin{aligned}
& > solve(C, U2) \\
& \qquad \frac{UI}{C1 C2 R1 R2 s^2 + C2 R1 s + C2 R2 s + 1} \tag{6}
\end{aligned}$$

$$\begin{aligned}
& > \frac{(6)}{UI} \\
& \qquad \frac{1}{C1 C2 R1 R2 s^2 + C2 R1 s + C2 R2 s + 1} \tag{7}
\end{aligned}$$

$$\begin{aligned}
& > combine(1 / ((s * T)^2 + C2 * (R1 + R2) * s + 1), power) \\
& \qquad \frac{1}{C1 C2 R1 R2 s^2 + C2 (R1 + R2) s + 1} \tag{8}
\end{aligned}$$

$$\begin{aligned}
& > T := sqrt(C1 C2 R1 R2) \\
& \qquad T := \sqrt{C1 C2 R1 R2} \tag{9}
\end{aligned}$$

$$\begin{aligned}
& > \frac{1}{C2 (R1 + R2) s + (s T)^2 + 1} \\
& \qquad \frac{1}{s^2 T^2 + C2 (R1 + R2) s + 1} \tag{10}
\end{aligned}$$

$$\begin{aligned}
& > \alpha \cdot T = C2 \cdot (R1 + R2) \\
& \qquad \alpha \sqrt{C1 C2 R1 R2} = C2 (R1 + R2) \tag{11}
\end{aligned}$$

$$\begin{aligned}
& > \alpha := solve(11), \alpha \\
& \qquad \alpha := \frac{C2 (R1 + R2)}{\sqrt{C1 C2 R1 R2}} \tag{12}
\end{aligned}$$

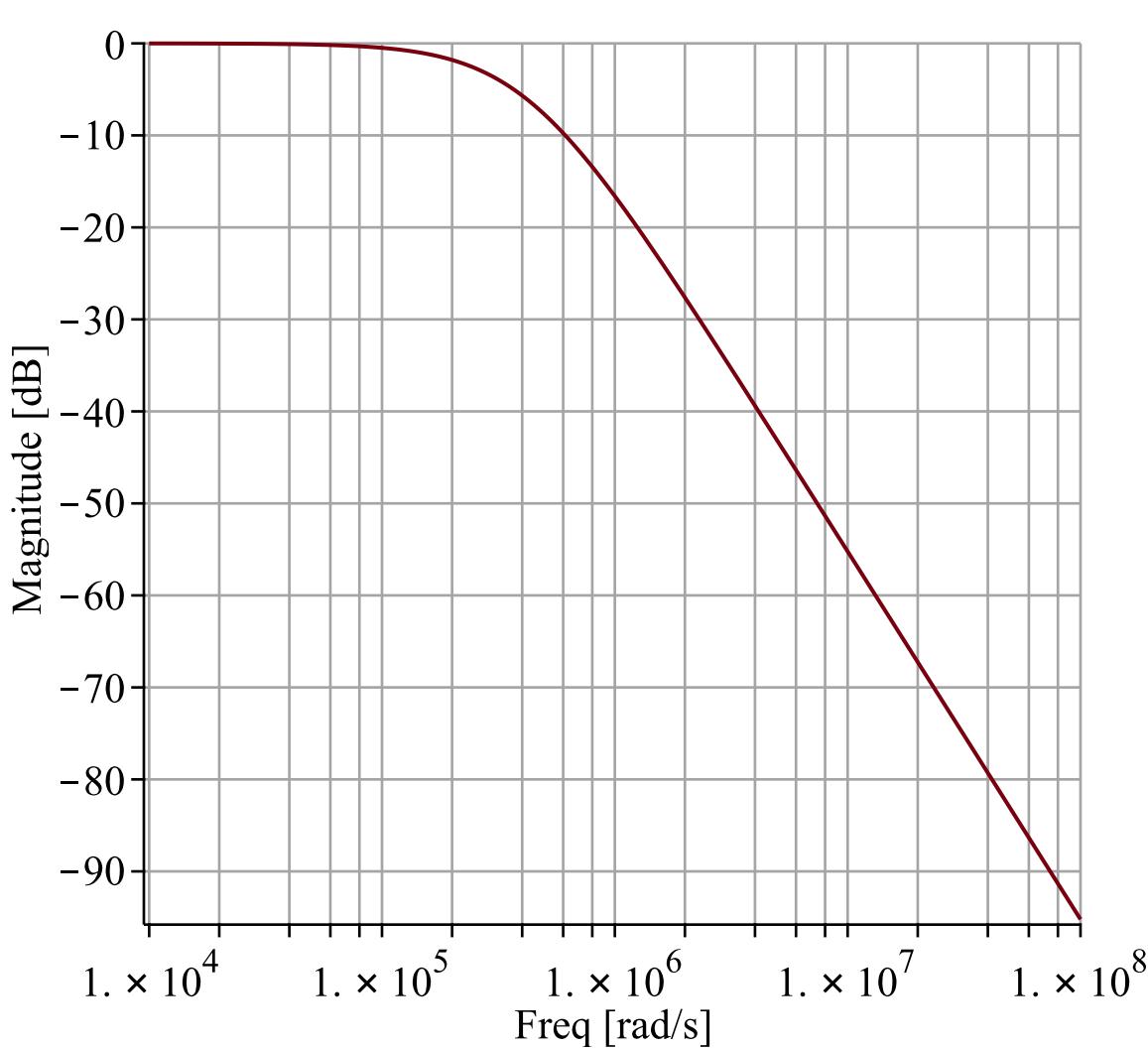
$$\begin{aligned}
& > \frac{1}{s^2 T^2 + \alpha \cdot s \cdot T + 1}
\end{aligned}$$

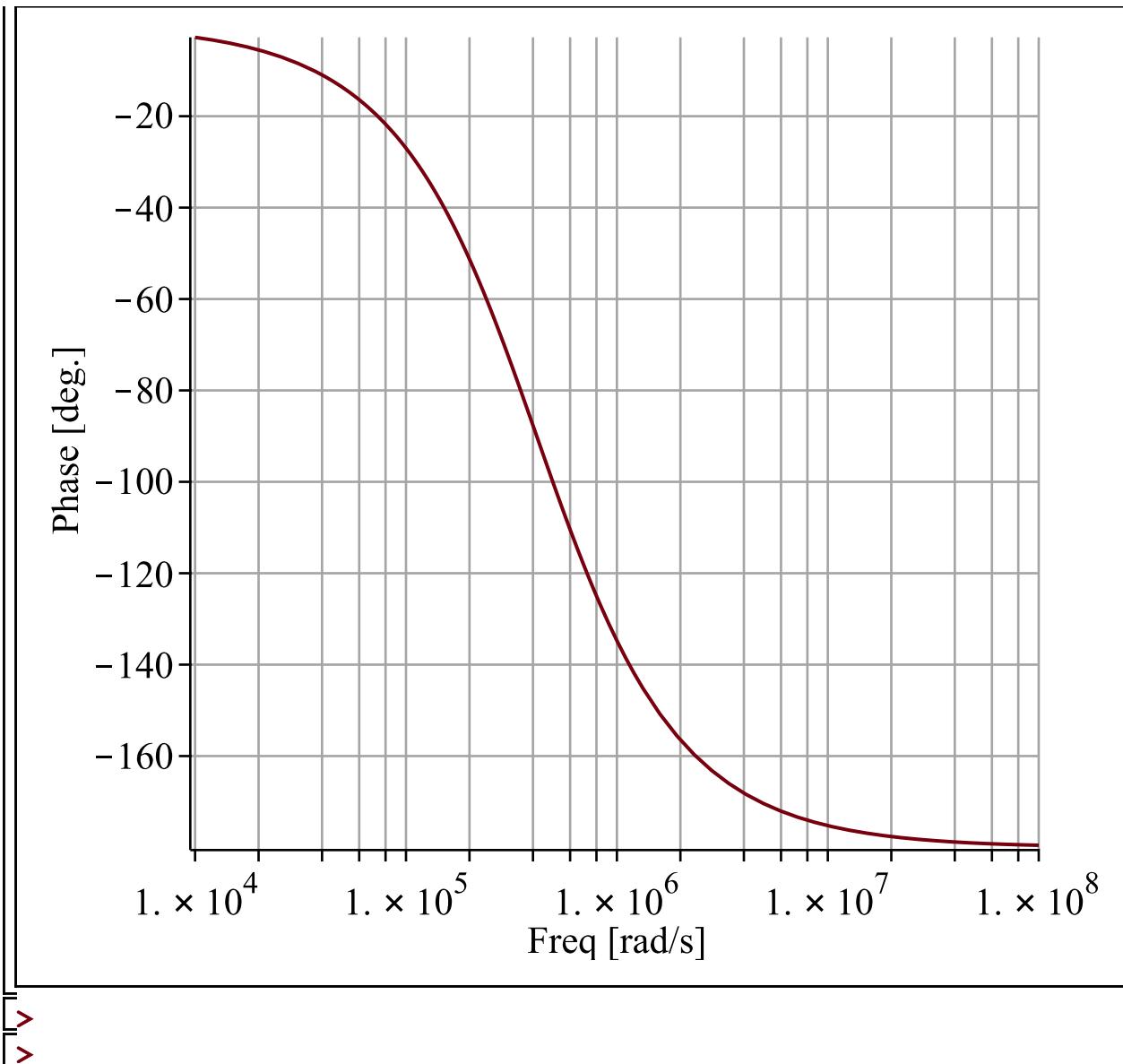
$$\begin{aligned}
& > with(DynamicSystems) : \\
& \qquad C1 := 160e-12; \\
& \qquad C2 := C1; \\
& \qquad RI := 15e3;
\end{aligned}$$

$R2 := 15\text{e}3;$
 $C1 := 1.60 \cdot 10^{-10}$
 $C2 := 1.60 \cdot 10^{-10}$
 $R1 := 15000.$
 $R2 := 15000.$ (13)

$\triangleright sys := TransferFunction\left(\frac{1}{s^2 T^2 + \alpha \cdot s \cdot T + 1}\right)$
 $sys := \begin{cases} \text{Transfer Function} \\ \text{continuous} \\ 1 \text{ output(s); 1 input(s)} \\ \text{inputvariable} = [uI(s)] \\ \text{outputvariable} = [yI(s)] \end{cases}$ (14)

$\triangleright BodePlot(sys)$





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