

$$\begin{aligned}
& \text{> } A := (Ua - U1) / R1 + (Ua - U2) / R2 + (Ua - U2) * s * C1 = 0 \\
& \quad A := \frac{Ua - U1}{R1} + \frac{Ua - U2}{R2} + (Ua - U2) s C1 = 0 \tag{1} \\
& \text{> } B := (U2 - Ua) / R2 + U2 * s * C2 = 0 \\
& \quad B := \frac{-Ua + U2}{R2} + U2 s C2 = 0 \tag{2} \\
& \text{> } \text{solve}(B, Ua) \\
& \quad U2 (C2 R2 s + 1) \tag{3} \\
& \text{> } \text{solve}(A, Ua) \\
& \quad \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} \tag{4} \\
& \text{> } C := \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} = U2 (C2 R2 s + 1) \\
& \quad C := \frac{U2 s C1 R1 R2 + U2 R1 + U1 R2}{s C1 R1 R2 + R1 + R2} = U2 (C2 R2 s + 1) \tag{5} \\
& \text{> } \text{solve}(C, U2) \\
& \quad \frac{U1}{C1 C2 R1 R2 s^2 + C2 R1 s + C2 R2 s + 1} \tag{6} \\
& \text{> } \frac{(6)}{U1} \\
& \quad \frac{1}{C1 C2 R1 R2 s^2 + C2 R1 s + C2 R2 s + 1} \tag{7} \\
& \text{> } \text{combine}(1 / ((s * T)^2 + C2 * (R1 + R2) * s + 1), \text{power}) \\
& \quad \frac{1}{C1 C2 R1 R2 s^2 + C2 (R1 + R2) s + 1} \tag{8} \\
& \text{> } T := \text{sqrt}(C1 C2 R1 R2) \\
& \quad T := \sqrt{C1 C2 R1 R2} \tag{9} \\
& \text{> } \frac{1}{C2 (R1 + R2) s + (s T)^2 + 1} \\
& \quad \frac{1}{s^2 T^2 + C2 (R1 + R2) s + 1} \tag{10} \\
& \text{> } \alpha \cdot T = C2 \cdot (R1 + R2) \\
& \quad \alpha \sqrt{C1 C2 R1 R2} = C2 (R1 + R2) \tag{11} \\
& \text{> } \alpha := \text{solve}((11), \alpha) \\
& \quad \alpha := \frac{C2 (R1 + R2)}{\sqrt{C1 C2 R1 R2}} \tag{12} \\
& \text{> } \\
& \quad \frac{1}{s^2 T^2 + \alpha \cdot s \cdot T + 1} \\
& \text{> } \text{with}(\text{DynamicSystems}) : \\
& \quad C1 := 160\text{e-}12; \\
& \quad C2 := C1; \\
& \quad R1 := 15\text{e}3;
\end{aligned}$$

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R2 := 15e3;
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CI := 1.60 10-10
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C2 := 1.60 10-10
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R1 := 15000.
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R2 := 15000.
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(13)

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> sys := TransferFunction( $\frac{1}{s^2 T^2 + \alpha \cdot s \cdot T + 1}$ )
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Transfer Function

continuous

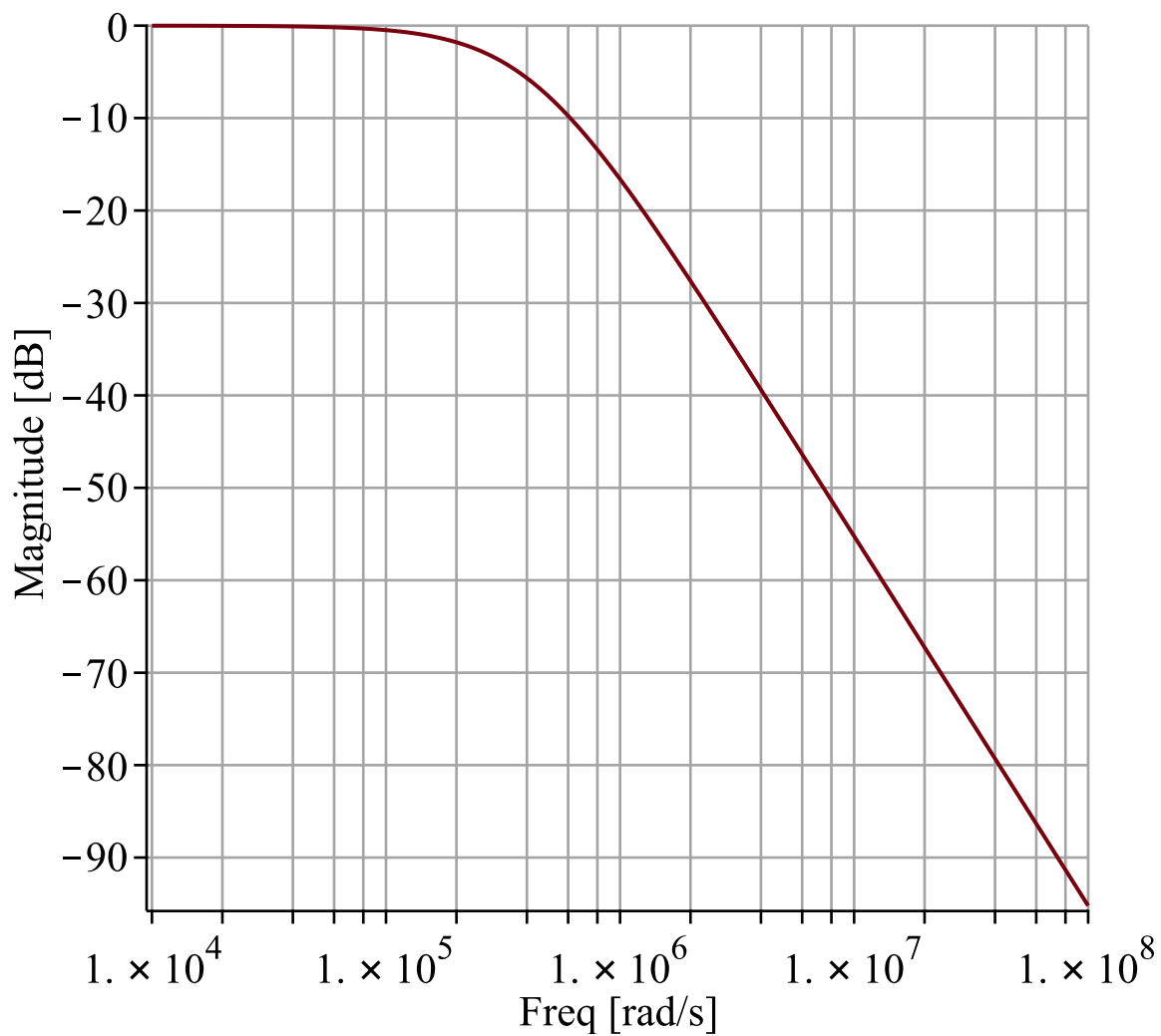
sys := 1 output(s); 1 input(s)

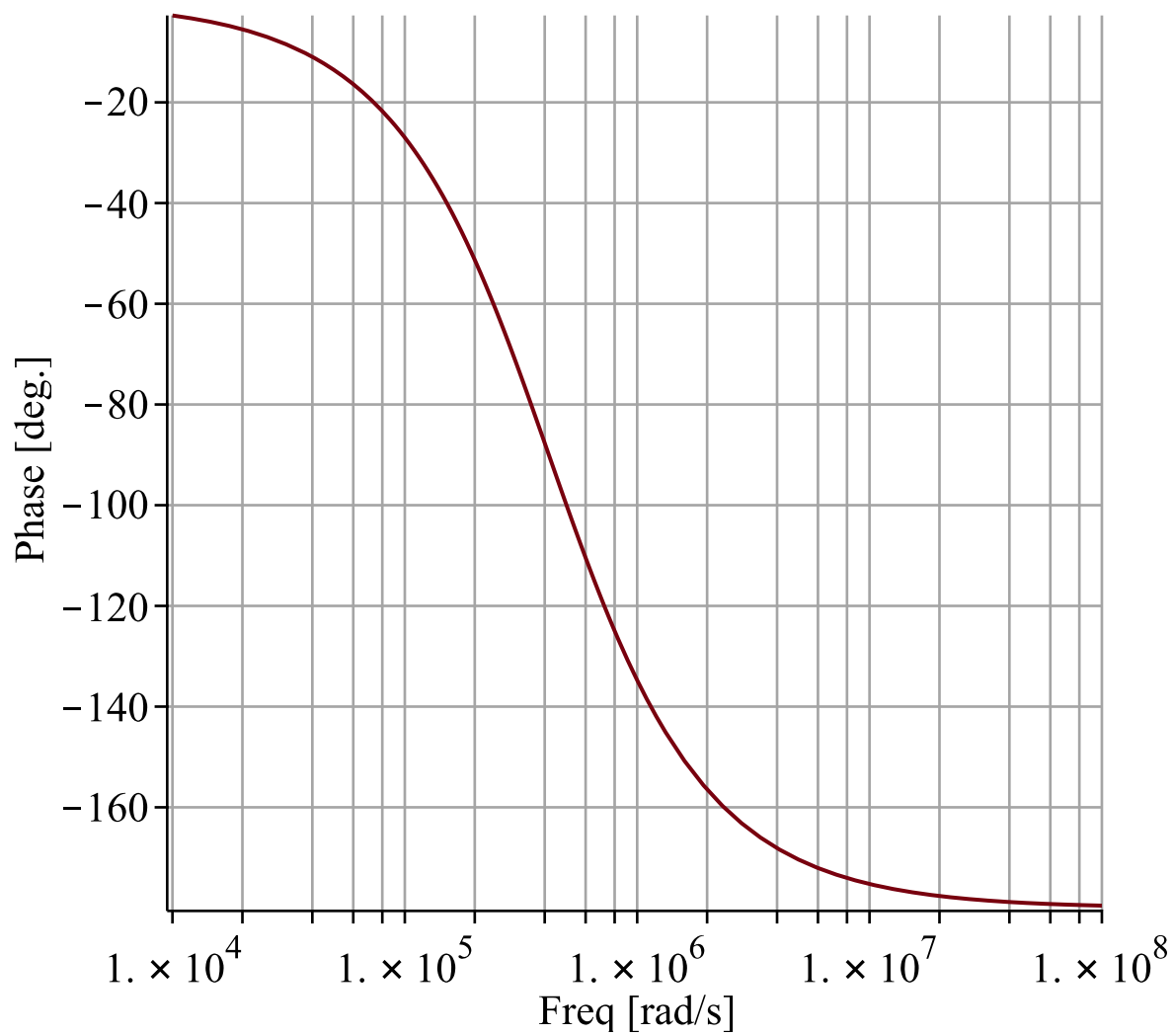
inputvariable = [uI(s)]

outputvariable = [yI(s)]

(14)

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> BodePlot(sys)
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