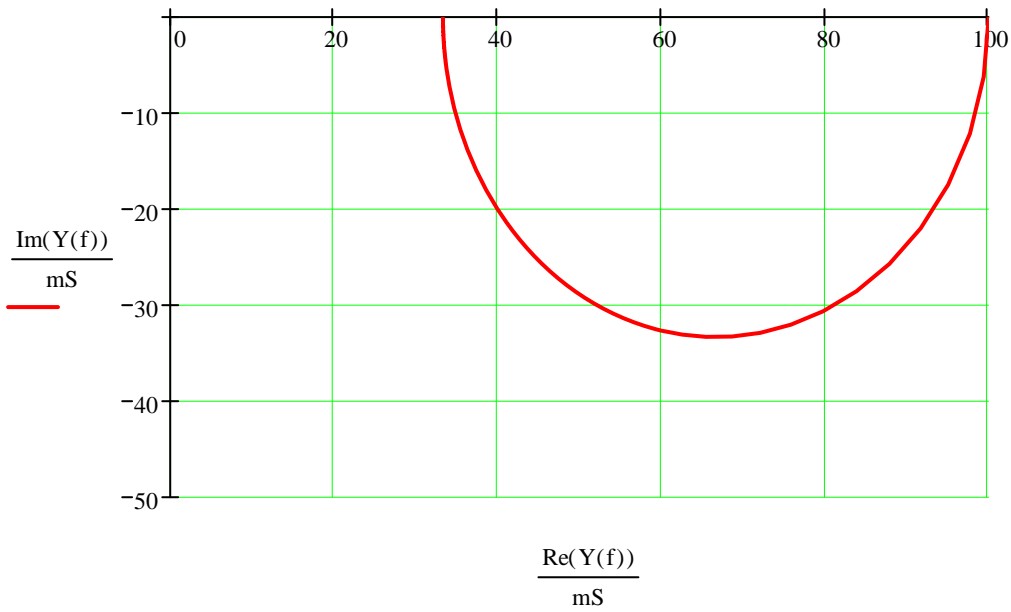


$$Y(f) := \frac{1}{Z(f)}$$

$$\text{mS} \equiv 10^{-3} \cdot \text{S}$$



b)

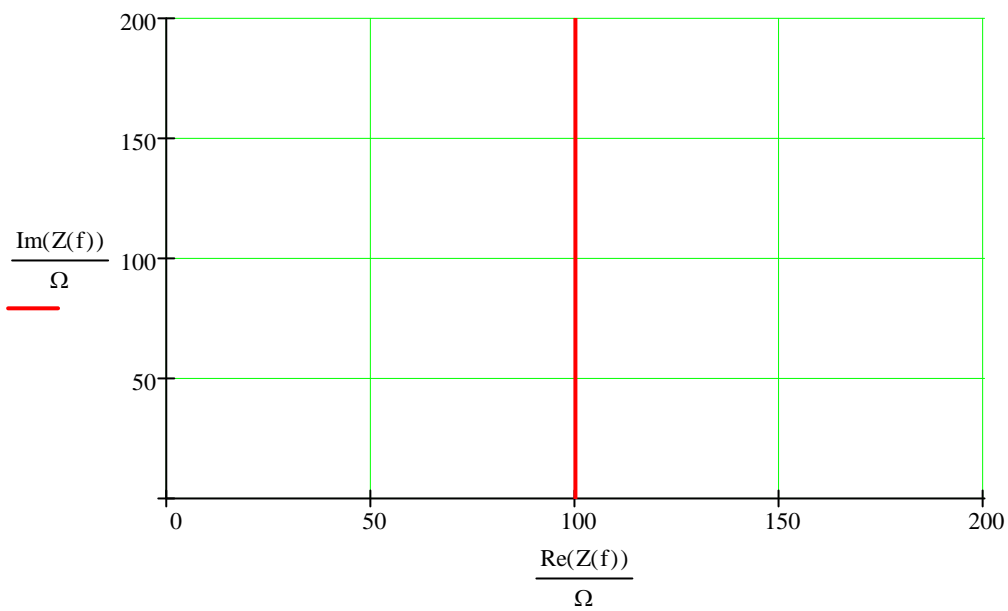
$$R := 100 \cdot \Omega \quad L := 50 \cdot \text{mH}$$

$$f := 0 \cdot \text{Hz}, 1 \cdot \text{Hz} \dots 10 \cdot \text{kHz}$$

$$Z(f) := R + j \cdot 2 \cdot \pi \cdot f \cdot L$$

$$Z(0 \cdot \text{Hz}) = 100 \Omega$$

$$Z(1 \cdot \text{GHz}) = 100 + 3.142j \times 10^8 \Omega$$



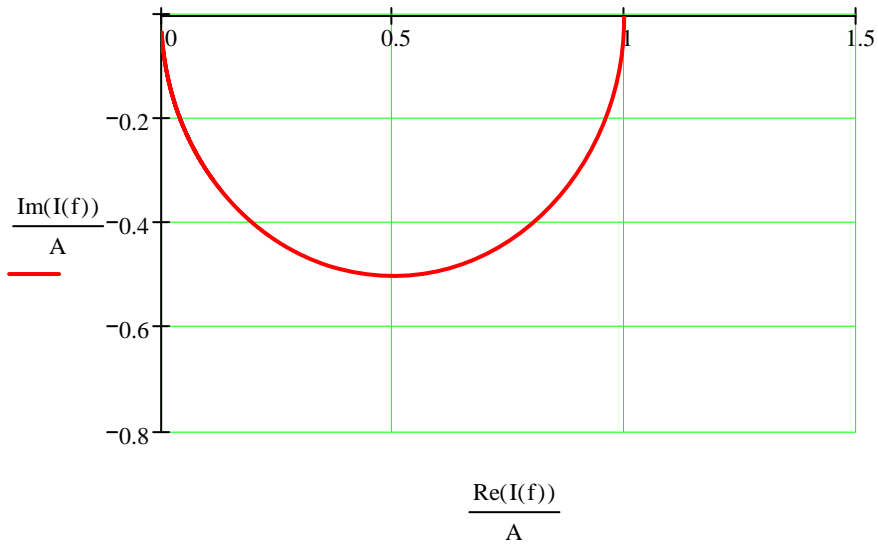
$$I(f) := \frac{U}{Z(f)}$$

$$I(3 \cdot \text{Hz}) = 1 - 9.424j \times 10^{-3} \text{ A}$$

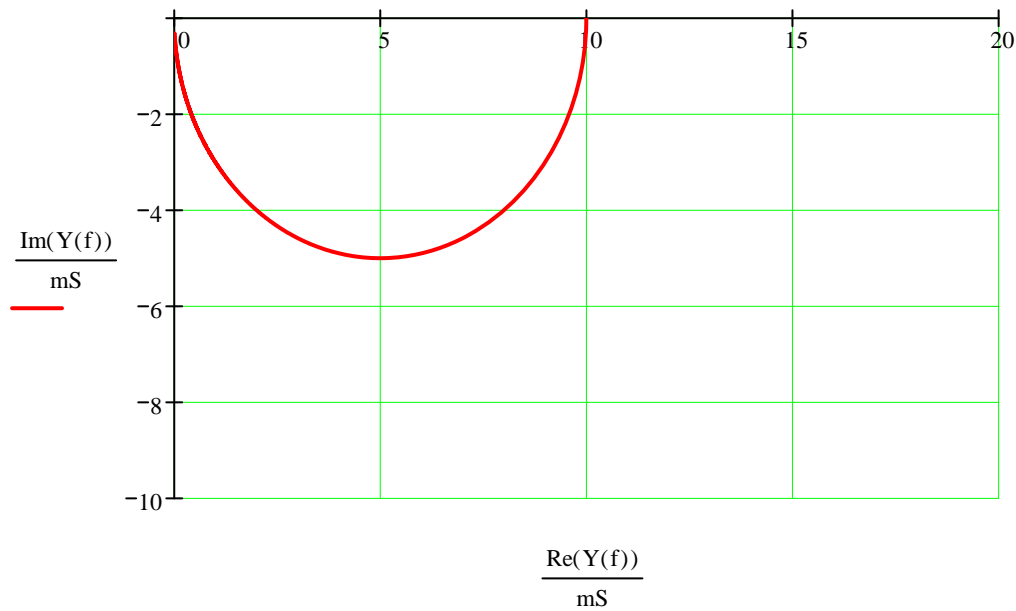
$$I(0 \cdot \text{Hz}) = 1 \text{ A}$$

$$I(10 \cdot \text{Hz}) = 0.999 - 0.031j \text{ A}$$

$$I(1 \cdot \text{GHz}) = 1.013 \times 10^{-13} - 3.183j \times 10^{-7} \text{ A} \quad I(0 \cdot \text{Hz}) = 0.91 - 0.286j \text{ A}$$



$$Y(f) := \frac{1}{Z(f)}$$



c)

$$R := 250 \cdot \Omega \quad C := 10 \cdot \mu\text{F} \quad L := 50 \cdot \text{mH} \quad U := 100 \cdot \text{V}$$

$$Y(f) := \frac{1}{R} + j \cdot 2 \cdot \pi \cdot f \cdot C + \frac{1}{j \cdot 2 \cdot \pi \cdot f \cdot L}$$

$$Z(f) := \frac{1}{Y(f)} \quad Z(0.0001 \cdot \text{Hz}) = 3.948 \times 10^{-12} + 3.142j \times 10^{-5} \quad Z(1 \cdot \text{GHz}) = 1.013 \times 10^{-12} - 1.592j \times 10^{-5} \Omega$$

$$I(f) := \frac{U}{Z(f)} \quad I(0.0001 \cdot \text{Hz}) = 0.4 - 3.183j \times 10^6 \text{ A} \quad I(1 \cdot \text{GHz}) = 0.4 + 6.283j \times 10^6 \text{ A}$$

