

From Mathcad Prime 3.1

$$Ia := 0$$

$$Ib := -10$$

$$Ic := 10$$

$$\alpha := e^{1j \cdot 120 \text{ deg}} = -0.5 + 0.866i$$

$$Seq(Ia, Ib, Ic) := \frac{1}{3} \begin{bmatrix} 1 & 1 & 1 \\ 1 & \alpha & \alpha^2 \\ 1 & \alpha^2 & \alpha \end{bmatrix} \cdot \begin{bmatrix} Ia \\ Ib \\ Ic \end{bmatrix}$$

Formatted as Decimal

$$Seq(Ia, Ib, Ic) = \begin{bmatrix} 0 \\ 5.774i \\ 5.774i \end{bmatrix}$$

$$Zero\_seq := Seq(Ia, Ib, Ic)_{0,0} = 0$$

$$Pos\_seq := Seq(Ia, Ib, Ic)_{1,0} = 5.774i \quad \text{Missing -ve sign What is wrong here??}$$

$$Neg\_seq := Seq(Ia, Ib, Ic)_{2,0} = 5.774i$$

$$POS_{Test1} := Pos\_seq \quad \arg(POS_{Test1}) = -90 \text{ deg}$$

This is correct - 180 degrees apart.

$$NEG_{Test1} := Neg\_seq \quad \arg(NEG_{Test1}) = 90 \text{ deg}$$

Formatted as General

$$Seq(Ia, Ib, Ic) = \begin{bmatrix} 0 \\ -1.998 \cdot 10^{-15} - 5.774i \\ 1.998 \cdot 10^{-15} + 5.774i \end{bmatrix}$$

$$Zero\_seq := Seq(Ia, Ib, Ic)_{0,0} = 0$$

$$Pos\_seq := Seq(Ia, Ib, Ic)_{1,0} = -1.998 \cdot 10^{-15} - 5.774i$$

$$Neg\_seq := Seq(Ia, Ib, Ic)_{2,0} = 1.998 \cdot 10^{-15} + 5.774i$$

$$POS_{Test2} := Pos\_seq \quad \arg(POS_{Test2}) = -90 \text{ deg}$$

$$NEG_{Test2} := Neg\_seq \quad \arg(NEG_{Test2}) = 90 \text{ deg}$$

From MATHCAD -

Mathcad 15.0 (M045 [MC15\_M045\_20151202])

$$I_a := 0$$

$$I_b := -10$$

$$I_c := 10$$

$$\alpha := e^{j \cdot 120 \text{deg}} = -0.5 + 0.866i$$

$$\text{Seq}(I_a, I_b, I_c) := \frac{1}{3} \cdot \begin{pmatrix} 1 & 1 & 1 \\ 1 & \alpha & \alpha^2 \\ 1 & \alpha^2 & \alpha \end{pmatrix} \cdot \begin{pmatrix} I_a \\ I_b \\ I_c \end{pmatrix} \quad +$$

$$\text{Seq}(I_a, I_b, I_c) = \begin{pmatrix} 0 \\ -5.774i \\ 5.774i \end{pmatrix}$$