

## Пример расчета для опыта №1.

$$\begin{aligned}
 j &:= \sqrt{-1} = i \\
 Ea &:= 164 \cdot \exp(j \cdot 0) = 164 & Ra &:= 45 & La &:= 0,281 \\
 Eb &:= 164 \cdot \exp(j \cdot 120) = 133,5257 + 95,2202 \cdot i & Rb &:= 45 & Lb &:= 0,281 \\
 Ec &:= 164 \cdot \exp(j \cdot (-120)) = 133,5257 - 95,2202 \cdot i & Rc &:= 45 & Lc &:= 0,281
 \end{aligned}$$

$$f := 60$$

$$\omega := 2 \cdot \pi \cdot f = 376,9911$$

$$Za := \sqrt{\left(Ra^2 + (\omega \cdot La)^2\right)} = 115,0961 \qquad \varphi a := \arctg\left(\omega \cdot \frac{La}{Ra}\right) = 1,1691$$

$$Zb := \sqrt{\left(Rb^2 + (\omega \cdot Lb)^2\right)} = 115,0961 \qquad \varphi b := \arctg\left(\omega \cdot \frac{Lb}{Rb}\right) = 1,1691$$

$$Zc := \sqrt{\left(Rc^2 + (\omega \cdot Lc)^2\right)} = 115,0961 \qquad \varphi c := \arctg\left(\omega \cdot \frac{Lc}{Rc}\right) = 1,1691$$

$$Ya := \frac{1}{Za} = 0,0087$$

$$Yb := \frac{1}{Zb} = 0,0087$$

$$Yc := \frac{1}{Zc} = 0,0087$$

$$ya := Ya \cdot \exp(j \cdot \varphi a) = 0,0023 + 0,0089 \cdot i \qquad |Ua| = 164$$

$$yb := Yb \cdot \exp(j \cdot \varphi b) = 0,0023 + 0,0089 \cdot i \qquad |Ub| = 164$$

$$yc := Yc \cdot \exp(j \cdot \varphi c) = 0,0023 + 0,0089 \cdot i \qquad |Uc| = 164$$

$$Ia := Ua \cdot ya = 0,3705 + 1,4537 \cdot i$$

$$Ib := Ub \cdot yb = -0,5424 + 1,3987 \cdot i$$

$$Ic := Uc \cdot yc = 1,1457 + 0,9684 \cdot i$$

$$|Ia| = 1,5002 \qquad |Ic| = 1,5002 \qquad |Ib| = 1,5002$$

$$Pa := Ia \cdot Ua \cdot \cos\left(\arctg\left(\omega \cdot \frac{La}{Ra}\right)\right) = 15,0073 + 58,8811 \cdot i$$

$$Pb := Ib \cdot Ub \cdot \cos\left(\arctg\left(\omega \cdot \frac{Lb}{Rb}\right)\right) = -50,7798 + 33,3709 \cdot i$$

$$Pc := Ic \cdot Uc \cdot \cos\left(\arctg\left(\omega \cdot \frac{Lc}{Rc}\right)\right) = 60,558 + 4,9938 \cdot i$$

$$|Pa| = 60,7635 \qquad |Pc| = 60,7635 \qquad |Pb| = 60,7635$$