



$$I_g := 225 \cdot \left(0.57 + i \cdot \sqrt{1 - 0.57^2} \right)$$

$$I_g = 128.25 + 184.8701 \cdot i$$

$$I_c := (-167) \cdot i \quad \text{'Current from generator output node through capacitor'}$$

$$I_{sys_leading} := 128 \cdot \left(0.98 + i \cdot \sqrt{1 - 0.98^2} \right)$$

$$I_{sys_lagging} := 128 \cdot \left(0.98 - i \cdot \sqrt{1 - 0.98^2} \right)$$

'hypothesis that system load is lagging
' hypothesis that system load is leading

' Should have $I_g - I_c - I_{sys} = 0$

' By KVL at generator output node

$$I_g - I_c - I_{sys_lagging} = 2.81 + 377.3417 \cdot i \quad \text{' Close}$$

$$I_g - I_c - I_{sys_leading} = 2.81 + 326.3984 \cdot i \quad \text{' Not close}$$

$$I_{g_rated} := 150 \cdot \left(0.8 + i \cdot \sqrt{1 - 0.8^2} \right)$$

$$I_{g_rated} = 120 + 90 \cdot i$$