$I = I_0 \dfrac{\pi\alpha^2}{\varepsilon_r^2\lambda^4 r^2} \sin^2\phi.$

determine $\dfrac{dI}{d\lambda}$ $\Rightarrow I = \left(\dfrac{I_0 \pi\alpha^2}{\varepsilon_r^2 r^2} \sin^2\phi\right) \lambda^{-4}$

$\dfrac{dI}{dr}.$ $\Rightarrow I = \left(\dfrac{I_0\pi\alpha^2 \sin^2\phi}{\varepsilon_r^2\lambda^4}\right) r^{-2}$

$\dfrac{dI}{d\phi}.$ $\Rightarrow I = \left(\dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4}\right)\sin^2\phi.$

$I = \left(\dfrac{I_0 \pi\alpha^2}{\varepsilon_r^2 r^2} \sin^2\phi\right) \lambda^{-4}$

$\dfrac{dI}{d\lambda} = -4\left(\dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2}\sin^2\phi\right)\lambda^{-5}$

$$\boxed{\dfrac{dI}{d\lambda}. = -4 I_0 \dfrac{\pi\alpha^2}{\varepsilon_r^2\lambda^5 r^2}\sin^2\phi}$$

$I = \left(\dfrac{I_0\pi\alpha^2 \sin^2\phi}{\varepsilon_r^2\lambda^4}\right) r^{-2}$

$\dfrac{dI}{dr} = -2\left(\dfrac{I_0\pi\alpha^2\sin^2\phi}{\varepsilon_r^2\lambda^4}\right) r^{-3}$

$$\boxed{\dfrac{dI}{dr}. = -2I_0 \dfrac{\pi\alpha^2}{\varepsilon_r^2\lambda^4 r^3}\sin^2\phi}$$

a function of a function - use the chain rule).

$\sin^2\phi \equiv (\sin\phi)^2$

$I = \left(\dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4}\right)\sin^2\phi.$

let $u = \sin\phi$

$I = \dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4} u^2$

$\dfrac{dI}{du} = 2\left(\dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4}\right)u.$

$\dfrac{du}{d\phi}. = \cos\phi.$

$\dfrac{dI}{d\phi} = \dfrac{dI}{du} \times \dfrac{du}{d\phi} = 2\left(\dfrac{I_0\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4}\right) u \cdot \cos\phi.$

$$\boxed{\dfrac{dI}{d\phi}. = 2I_0 \dfrac{\pi\alpha^2}{\varepsilon_r^2 r^2\lambda^4}\sin\phi\cdot\cos\phi}$$