

Question 3.1

$$P_i := 1.5 \cdot 10^{-3} \cdot \text{W} \quad \text{Power Launched}$$

$$P_d := 2 \cdot 10^{-6} \cdot \text{W} \quad \text{Optical power level for detection}$$

$$\alpha_{\text{dB}} := \frac{0.5}{\text{km}} \quad \text{Attenuation}$$

$$\text{Loss} := 10 \cdot \log\left(\frac{P_i}{P_d}\right)$$

$$\text{Loss} = 28.751 \text{ dB}$$

$$L := 10 \cdot \log\left(\frac{P_i}{P_d}\right) \cdot \frac{1}{\alpha_{\text{dB}}}$$

$$L = 5.75 \times 10^4 \text{ m}$$