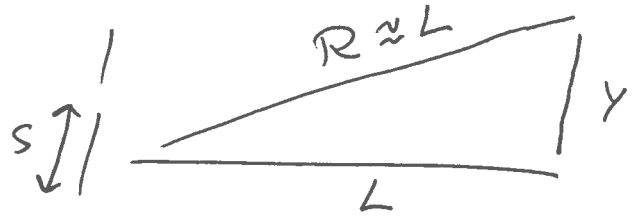
27- Interference

① $S \sin\theta = n\lambda$



$\sin\theta = \frac{Y}{R} = \frac{Y}{\sqrt{L^2+Y^2}} \approx$ $\quad R = \sqrt{L^2+Y^2} \approx L$

Here: $n = 15 \quad S = .8E-3\ m \quad Y = 89E-3\ m \quad L = 9\ m$

$$\lambda = \frac{S\sin\theta}{nL} = \frac{SY}{nL\sqrt{1+\frac{Y^2}{L^2}}} \approx \frac{SY}{nL}$$

$$= \frac{(.8E-3)(89E-3)}{(15)(9)} = \frac{(.8)(89)}{(15)(9)}\ E-6$$

$$= .527E-6 = 527E-9 = \boxed{527\ nm = \lambda}$$