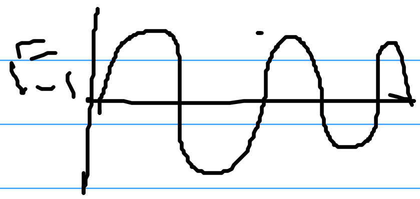
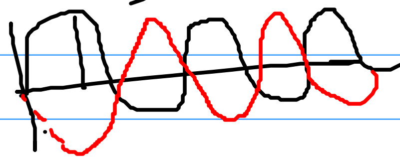
① ②

E_1  + E_2  $= E_1^2 + E_2^2 + 2E_1E_2\cos\delta$

$I \propto |E|^2$ $\quad I = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\delta$

$\delta = 0$ $\quad I_{max} = I_1 + I_2 + 2\sqrt{I_1 I_2}$

$= I_1 + I_1 + 2\sqrt{I_1 I_1}$

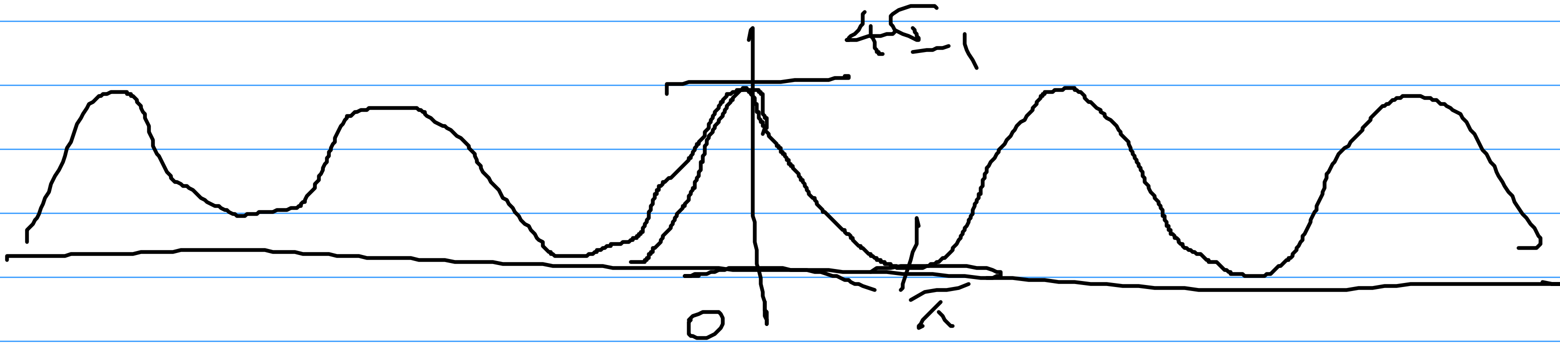
$I_{max} = 4I_1$

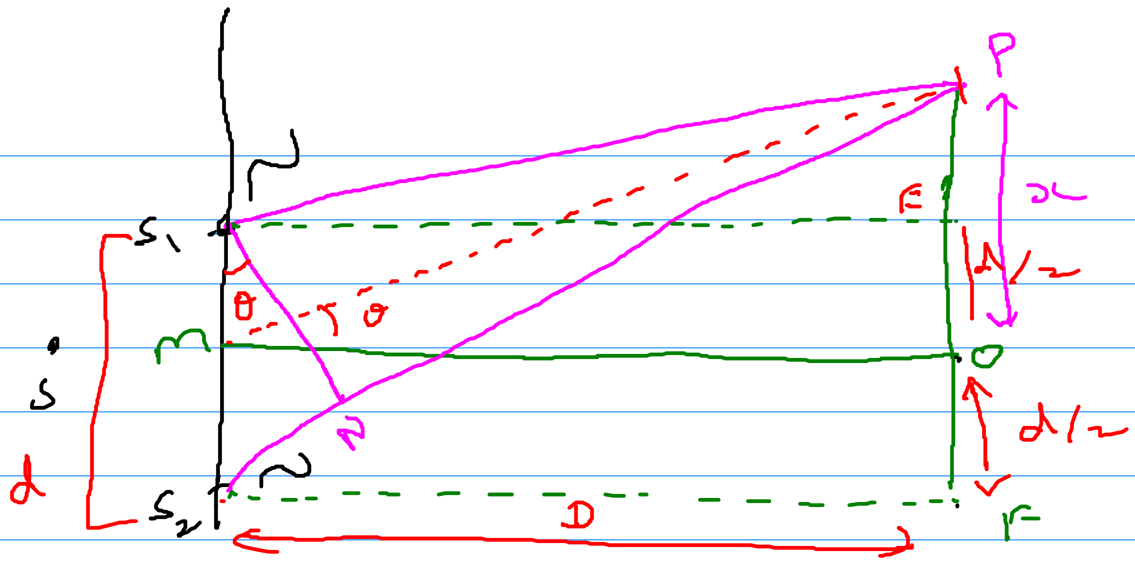
$I_{min} = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos 180^\circ$

$= I_1 + I_2 - 2\sqrt{I_1 I_2}$

$= I_1 + I_2 - 2\sqrt{I_1 I_1}$

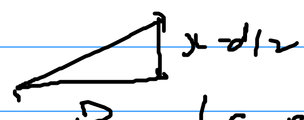
$= 2I_1 - 2I_1 = 0$ =



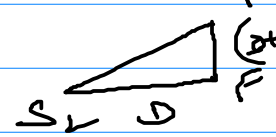


$\Delta S_1 PE$ $\qquad \Delta S_2 PF$

$PE = x - d/2$



$(S_1P)^2 = D^2 + (x - d/2)^2$



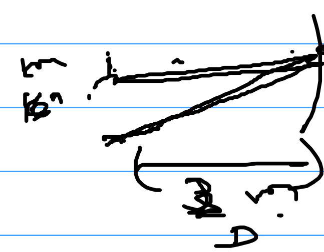
$(S_2P)^2 = D^2 + (x + d/2)^2$

$$(S_2P)^2 - (S_1P)^2 = \left[D^2 + (x + d/2)^2\right] - \left[D^2 + (x - d/2)^2\right]$$

$$(S_2P + S_1P)(S_2P - S_1P) = \cancel{D^2} + \cancel{x^2} + \cancel{(d/2)^2} + xd - \cancel{D^2} - \cancel{x^2} - \cancel{(d/2)^2} + xd$$

$$S_2P - S_1P = 2xd/(S_2P + S_1P)$$

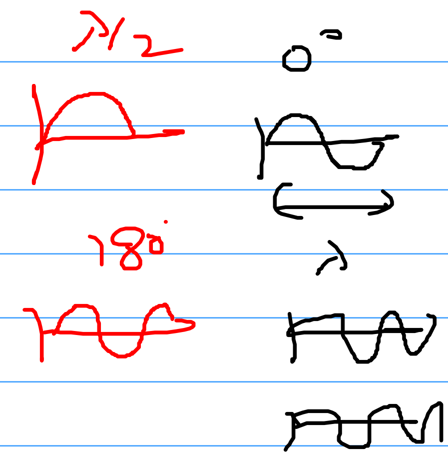
$$= 2xd/(D + D)$$

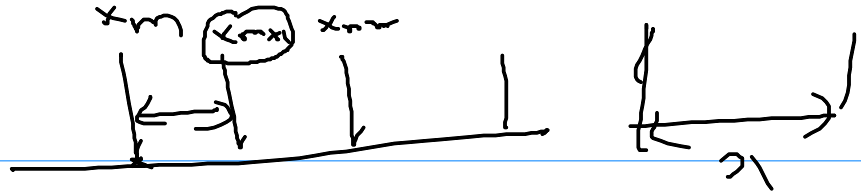


path diff $\boxed{S_2P - S_1P = \frac{xd}{D}}$

$$\frac{xd}{D} = m\lambda$$

$$\frac{xd}{D} = (2m+1)\lambda/2$$





$$\frac{x d}{D} = m\lambda$$

$$x_m = \frac{m\lambda D}{d}$$

$$x = \frac{m\lambda D}{d}$$

$$x_{m+1} = \frac{(m+1)\lambda D}{d}$$

$$\beta = x_{m+1} - x_m = \frac{\lambda D}{d}$$

$\lambda \Rightarrow 6032$

$\lambda_0 = 432$