$$\therefore \quad Path\ difference, pd = d\frac{y}{D}$$

The point P on the screen will be a point of secondary minima if,

$$\boldsymbol{path\ difference = (2n-1)\times\frac{\lambda}{2}} \qquad n = 1, 2, 3, \dots\dots$$

or $$d\frac{y}{D} = (2n-1)\times\frac{\lambda}{2}$$

or $$y = (2n-1)\times\frac{\lambda D}{2d}$$

Hence, for n^{th} secondary minima,

$$y_n = (2n-1)\times\frac{\lambda D}{2d}$$

For 1^{st} *secondary minimum*: $y_1 = \frac{\lambda D}{2d}$ [first dark fringe]

For 2^{nd} *secondary minimum*: $y_2 = 3\frac{\lambda D}{2d}$ [second dark fringe]

and so on.

Hence, Dark fringe width: $$\beta = y_2 - y_1 = \frac{\lambda D}{d}$$

The point P on the screen will be a point of secondary maxima if,

$$\boldsymbol{path\ difference = n\lambda} \qquad n = 0, 1, 2, 3, \dots\dots$$

or $$d\frac{y}{D} = n\lambda \qquad [n = 0, for\ central\ maximum]$$

or $$y = n\frac{\lambda D}{d}$$

Hence, for n^{th} secondary maxima,

$$y_n = n\frac{\lambda D}{d}$$

For 1^{st} *secondary maximum*: $y_1 = \frac{\lambda D}{d}$ [first bright fringe]

For 2^{nd} *secondary maximum*: $y_2 = 2\frac{\lambda D}{d}$ [second bright fringe]

and so on.

Hence, Bright fringe width: $$\beta = y_2 - y_1 = \frac{\lambda D}{d}$$

Thus, it can be seen that in an interference pattern, dark fringes and bright fringes are equally spaced.

Note!!

Knowing the value of fringe width (β), the wavelength of monochromatic light (λ) can be determined as: $\lambda = {}^{\beta d}/_{D}$