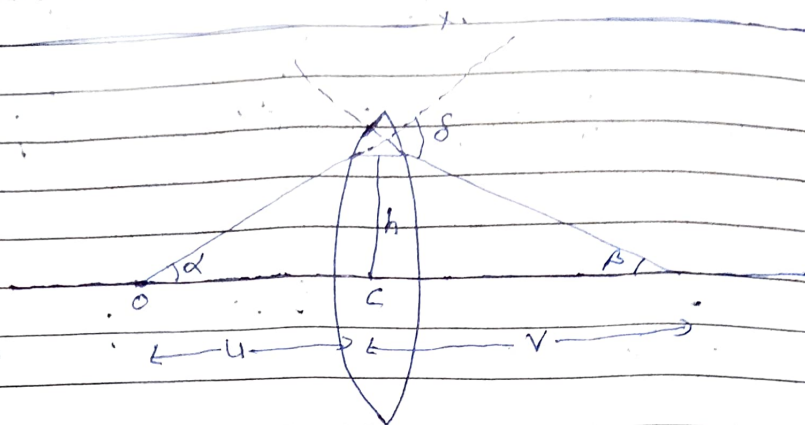


DEVIATION PRODUCED BY THIN LENS



When incident ray strikes on a lens then after refraction lens it get's deviated the angle between incident ray and emergent ray is angle of deviation.

from fig

Exterior angle = sum of interior angle

$$\delta = \alpha + \beta \quad \text{--- (i)}$$

from

$$\tan \alpha = \frac{h}{OC} = \frac{h}{-u}$$

$$\tan \beta = \frac{h}{CO} = \frac{h}{v}$$

If angle are small (For paraxial ray)

$$\tan \alpha \approx \alpha, \quad \tan \beta \approx \beta$$

$$\alpha = \frac{h}{-u}, \quad \beta = \frac{h}{v}$$

Put this values in eqⁿ (i)

$$S = \frac{h}{-u} + \frac{h}{v}$$

$$S = h \left(-\frac{1}{u} + \frac{1}{v} \right)$$

$$S = \frac{h}{f}$$

(Lens formula)

$$\frac{1}{-u} + \frac{1}{v} = \frac{1}{f}$$

————— x —————