03. The human eye has an approximate angular resolution of $\phi = 5.8 \times 10^{-4}$ rad and a typical photo printer prints a minimum of 300 dpi (dots per inch, 1 inch = 2.54 cm). At what minimal distance z should a printed page be held so that one does not see the individual dots.

Sol. Angular separation = 5.8×10^{-4} radian

The average distance between any two dots = $\frac{2.54}{300} = 0.85 \times 10^{-2}$ cm

At the distance z cm, angle subtended = $\frac{arc}{rad} = \frac{0.85 \times 10^{-2}}{z}$

Resolution angle for human = $5.8 \times 10^{-2} rad = \frac{0.85 \times 10^{-2}}{z}$

Maximum distance up to which human eye cannot see

2 dots distinctly $= z = \frac{0.85 \times 10^{-2}}{5.8 \times 10^{-2}} = 14.5 cm$

Which is less than distance of distinct vision.

So a normal person cannot see the dots.