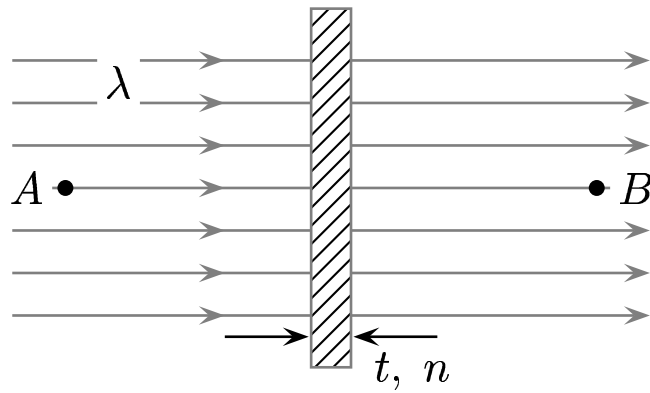


A light ray with wavelength λ passes from A to B through a plastic sheet of thickness t and index of refraction n .



Find the phase difference $\Delta\phi$ at B , with and without the film.

- A) $\Delta\phi = 0$.
- B) $\Delta\phi = (n - 1) k t$.
- C) $\Delta\phi = n k t$.
- D) $\Delta\phi = (n + 1) k t$.

Phase angles through the film $\phi = k t$, $\phi_n = k_n t = n k t$ for the cases without and with the film respectively. Therefore the phase difference at B is due to the phase difference traveling through the thickness of the film, with and without the film, which is given by $\Delta\phi = \phi_n - \phi = (n - 1) k t$.

Answer **B**.