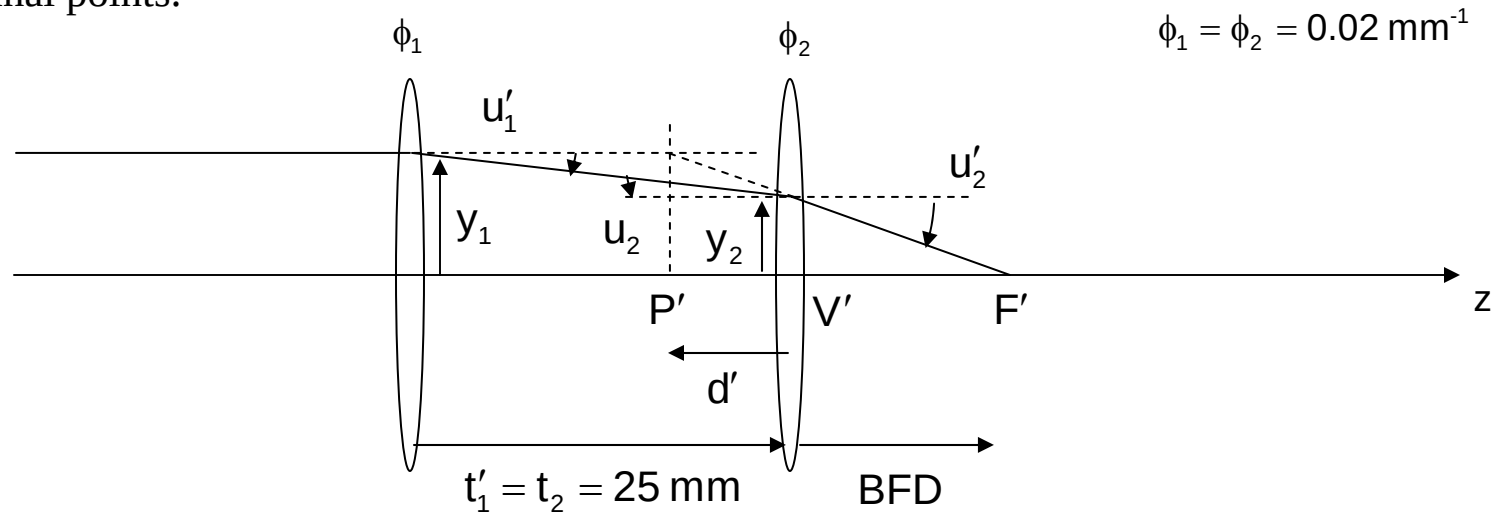
Raytrace Example (Continued)– Two Separated Thin Lenses in Air

A ray from an axial object at infinity can be used to determine the rear cardinal points.



$y_1 = 1.0$ $\quad u_1 = 0$ $\quad u_1' = u_1 - y_1\phi_1$ $\quad u_1' = -0.02$ $\quad y_2 = y_1 + u_1' t_1'$ $\quad y_2 = 0.5\ \text{mm}$ $\quad u_2 = u_1' = -0.02$ $\quad u_2' = u_2 - y_2\phi_2$ $\quad u_2' = -0.03$ $\quad y_3 = y_2 + u_2'\, BFD = 0$ $\quad BFD = -\dfrac{y_2}{u_2'} = 16.666\ \text{mm}$

$$\phi = -\frac{\omega_2'}{y_1} = -\frac{n'u_2'}{y_1} = -\frac{u_2'}{y_1} = -0.03\ mm^{-1}$$

$$f = f_R' = \frac{1}{\phi} = 33.333\ mm$$

$$d' = \overline{V'P'} = \frac{y_1 - y_2}{u_2'} = -16.666\ mm$$

or

$$d' = BFD - f_R' = BFD - f = -16.666\ mm$$