

Other:  $n > \sqrt{2}$

№ 1.25

Дано:

$$\Gamma_1 = 0,2$$

$$\Gamma_c = \frac{1}{3}$$

Найти:  $\Gamma_2$

Решение:

$$1) \frac{1}{a} - \frac{1}{b} = -\frac{1}{F_1}, \quad \Gamma_1 = \frac{b}{a} \Rightarrow \frac{1}{a} \left(1 - \frac{1}{\Gamma_1}\right) = -\frac{1}{F_1}$$

$$2) \frac{1}{a} + \frac{1}{c} = \frac{1}{F_2}, \quad \Gamma_2 = \frac{c}{a} \Rightarrow \frac{1}{a} \left(1 + \frac{1}{\Gamma_2}\right) = \frac{1}{F_2}$$

$$3) \frac{1}{a} - \overset{\text{равно}}{\frac{1}{d}} = \frac{1}{F_2} - \frac{1}{F_1}, \quad \Gamma_c = \frac{d}{a}, \quad \frac{1}{a} \left(1 - \frac{1}{\Gamma_c}\right) = \frac{1}{F_2} - \frac{1}{F_1}$$

$$4) \cancel{\frac{1}{a}} - \frac{1}{\Gamma_1} + 1 + \frac{1}{\Gamma_2} = \cancel{\frac{1}{a}} - \frac{1}{\Gamma_c}$$

$$\Gamma_2 = \left( \frac{1}{\Gamma_1} - 1 - \frac{1}{\Gamma_c} \right)^{-1} = (5 - 1 - 3)^{-1} = 1$$

Ответ:  $\Gamma_2 = 1$

№ 1.41.

Дано:

$$f_1 = 1 \text{ см}$$

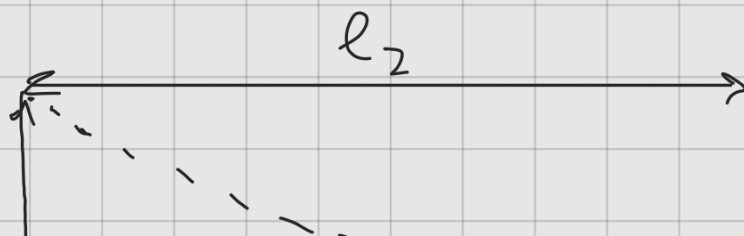
$$f_2 = 3 \text{ см}$$

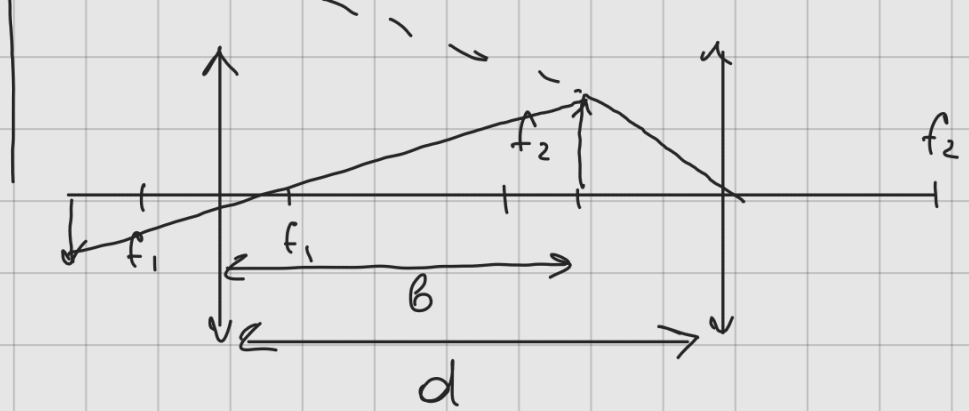
$$d = 20 \text{ см}$$

$$l_2 = 25 \text{ см}$$

Найти:  $l_1$

Решение:





$$1) \frac{1}{f_1} = \frac{1}{l_1} + \frac{1}{b} \Rightarrow b = \frac{f_1 l_1}{l_1 - f_1}$$

$$2) \frac{1}{f_2} = \frac{1}{d-b} - \frac{1}{l_2} \Rightarrow d-b = \frac{f_2 l_2}{f_2 + l_2}$$

$$3) d = \frac{f_1 l_1}{l_1 - f_1} + \frac{f_2 l_2}{f_2 + l_2}$$

$$d = \frac{f_1 f_2 l_1 + f_1 l_2 l_1 + f_2 l_1 l_2 - f_1 f_2 l_2}{l_1 f_2 - f_1 f_2 + l_1 l_2 - f_1 l_2}$$

$$d l_1 f_2 - d f_1 f_2 + d l_1 l_2 - d f_1 l_2 = \dots$$

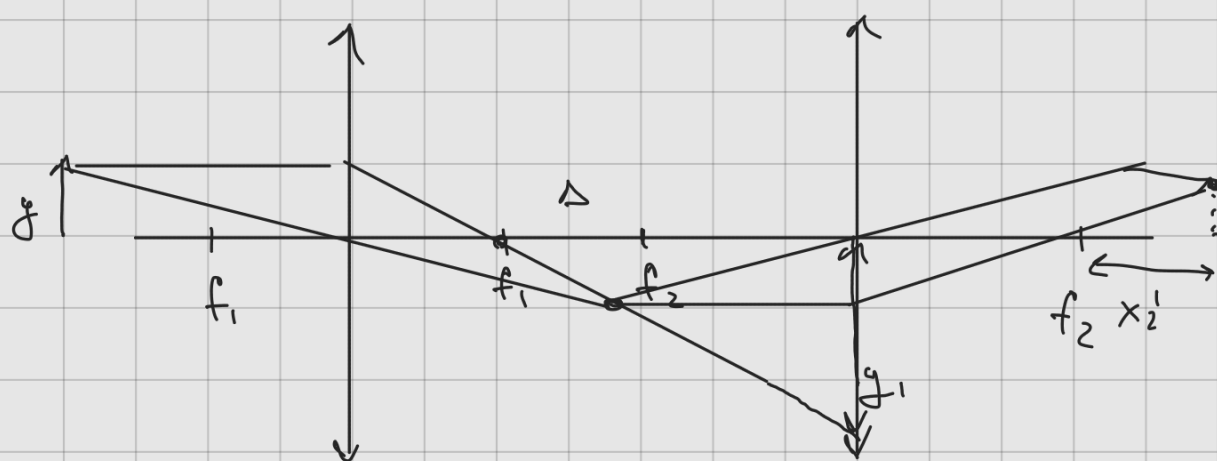
$$l_1 = \frac{f_1 (d l_2 + d f_2 - f_2 l_2)}{d f_2 + d l_2 - f_1 f_2 - f_1 l_2 - f_2 l_2} \approx 1,061 \text{ cm}$$

$$4) d = \Gamma_1 \cdot \Gamma_2 = \frac{b}{l_1} \cdot \frac{l_2}{d-b} = \frac{f_1}{l_1 - f_1} \cdot \frac{l_2}{d - \frac{f_1 l_1}{l_1 - f_1}} =$$

$$= f_1 \cdot \frac{l_2}{d(l_2 - f_1) - f_1 l_1} \approx 157$$

№ 1.32

Дано:  
 $f_1, f_2, l$   
 Найти:  $f$



1)  $x_2' = -\frac{f_2^2}{\Delta}$  - ур-е Ньютона (Курьенко)

2)  $\frac{g}{-g_1} = \frac{f_1}{\Delta - f_2}$  ; 3)  $\frac{g}{-g_1} = \frac{-f_1'}{f_2 + x_2'}$

4)  $\frac{g}{-g_1} = \frac{f_1'}{f_2 - \frac{f_2^2}{\Delta}} = -\frac{f_1' \Delta}{f_2(\Delta - f_2)} \Rightarrow$

$$\Rightarrow f' = -\frac{f_1 f_2}{\Delta} = \frac{f_1 f_2}{f_1 + f_2 - l}$$



$$D = D_1 + D_2 - D_1 D_2 \Delta$$