

Name (print) Ming THIRD MIDTERM Name (signed) 21.7

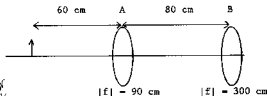
Discussion Instructor (circle one): Chen Emerson Iguchi Stoops

Discussion Section # _____

SHOW ALL WORK!!!!
REPORT ALL NUMBERS TO THREE SIGNIFICANT FIGURES!
Use the conversion constants and data given on the front page.

An object is set up 60.0 cm to the left of lens A. The other dimensions and focal lengths are as shown.

- (a) Calculate the position of the final image as a distance along the optic axis measured from lens A. State clearly whether the image is to the right or left of lens A.
(b) Calculate the magnification of the system.
(c) State clearly and give a reason for whether the final image is erect or inverted.



is total for (a).

$$\frac{1}{s_1} + \frac{1}{s_1'} = \frac{1}{f_1} \Rightarrow s_1' = -180 \text{ cm} \quad 5\checkmark$$

$$s_2 = 180 \text{ cm} + 80 = 260 \text{ cm}$$

$$\frac{1}{s_2} + \frac{1}{s_2'} = \frac{1}{f_2} \Rightarrow s_2' = -1950 \text{ cm from B} \quad 5\checkmark$$

$= 1870 \text{ cm from A. } 3\checkmark$

The image is to the left of A. \checkmark

6 (b). $M = m_1 m_2 = \left(-\frac{s_1'}{s_1}\right) \left(-\frac{s_2'}{s_2}\right) = 22.5 \quad \checkmark$

4 (c). Erect. ^{Because} $M > 0$