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← **PHYS 1260, section 001, Fall 2020**

INSTRUCTOR

**Joel DeWitt**

East Carolina University

## Chapter 24 (Homework)

| Current Score                                            |     |     |     |     | Due Date                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------|-----|-----|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QUESTION                                                 | 1   | 2   | 3   | 4   | <div>TOTAL SCORE</div> <div><div>-/9</div><div>0.0%</div></div>                                                                                                                                                                                                                                                                                         |
| POINTS                                                   | -/3 | -/2 | -/1 | -/3 |                                                                                                                                                                                                                                                                                                                                                         |
|                                                          |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                         |
|                                                          |     |     |     |     | <div>THU, OCT 29, 2020</div> <div>11:59 PM EDT</div> <div><div><div></div></div>Request Extension</div>                                                                                                                                                                                                                                                 |
| <div><div><div></div></div>Description</div> <div></div> |     |     |     |     | <div>Assignment Submission &amp; Scoring</div> <div>Assignment Submission</div> <div>For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.</div> <div>Assignment Scoring</div> <div>Your last submission is used for your score.</div> |

1. [-/3 Points]

DETAILS

COLFUNPHYS1 24.P.029.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

A laser beam of diameter  $d_1 = 1.3$  mm is directed along the optical axis of a thin lens of focal length  $+4.8$  cm (see figure below).



(a) How far from the lens will the beam be focused?

(b) A second positive lens is placed to the right of the first. Light emerges from the second lens in a parallel beam of diameter  $d_2 = 3.9$  mm. Thus the combination of lenses acts as a beam expander. Find the focal length of the second lens.

Find the distance between the lenses.

2. [-/2 Points]

DETAILS

COLFUNPHYS1 24.P.032.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

Find the image distance and linear magnification for a small object on the optical axis,  $19.3$  cm from a lens of focal length  $-10$  cm.

image distance

linear magnification

3. [-/1 Points]

DETAILS

COLFUNPHYS1 24.P.033.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

Find the focal length of a lens that produces an inverted image **six** times the size of a small object placed on the optical axis, **27.3** cm from the lens.

4. [-/3 Points]

DETAILS

COLFUNPHYS1 24.P.036.

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

The lenses in the figures below are all made of glass of index 1.50 and have surfaces with radii of curvature of magnitude either **9.10** cm or **20.7** cm. Find the radii of curvature and the focal length of each lens.

(a)



(b)



(c)



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