PHY 1120 Name: Alex Yeoh

PSP Homework 25 7/21/20

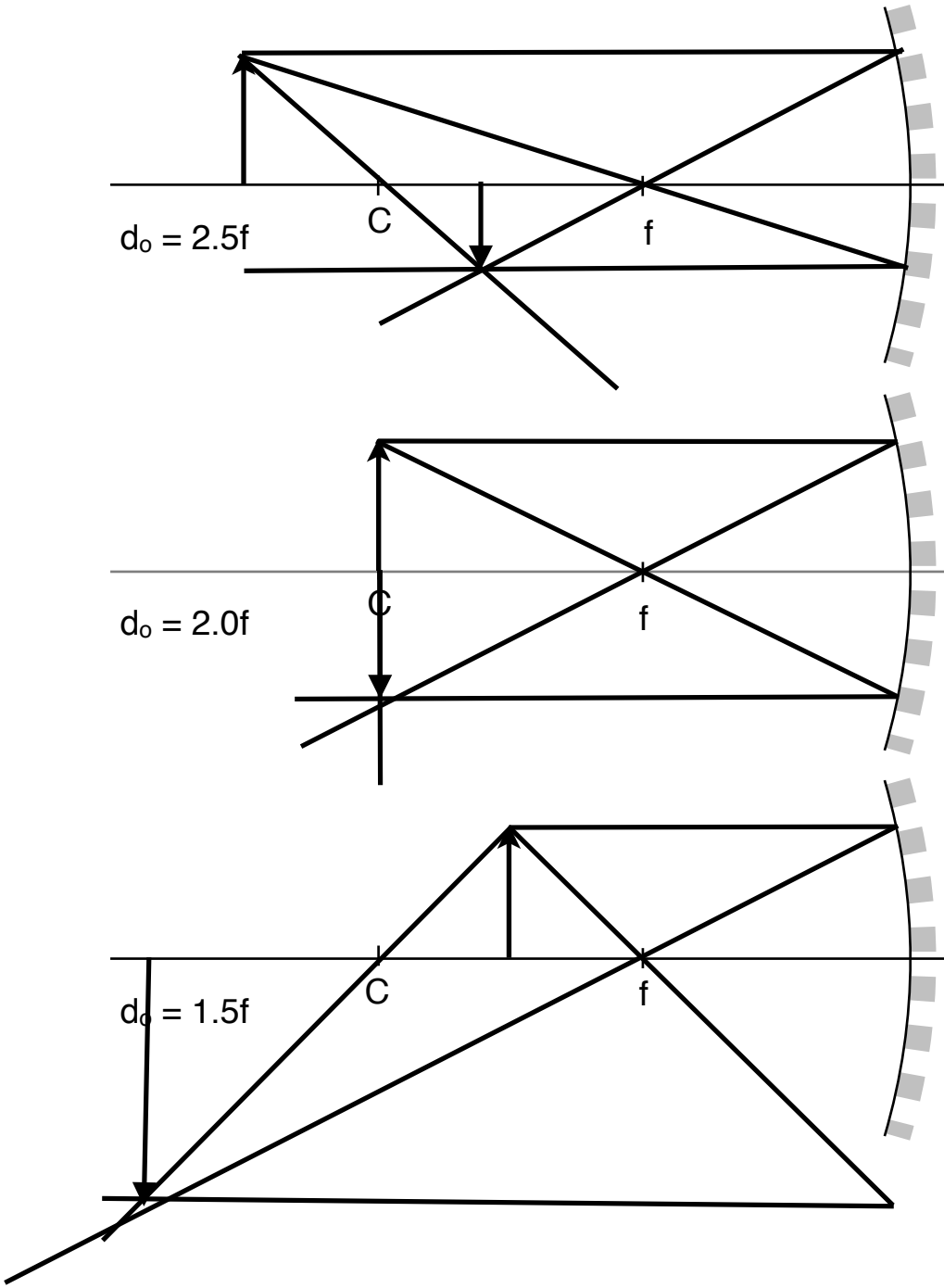
PSP: This assignment is designed to test your understanding of the current chapter's content. You will be required to solve the problem AND briefly explain your solution using the model provided. Answering the question without explanation will result in a grade of 20% for the assignment.

1) Please go to "Chapter 25" in the course content on PILOT. Download and print (if possible) the Mirror and Lens Diagram files.

   - For each diagram find the position of the image using the light ray rules. Make sure you complete each diagram by drawing the final image.

   - For each diagram assume the focal length is 10.0 cm and the object height is 5 cm. Determine object distance in centimeters then calculate image distance, image height, and magnification.

_____ / 10pts



1/f=1/di+1/do
1/10=1/di+1/25
di=16.67cm

hi/ho=-di/do
hi/5=-16.67/25
hi=-3.33cm

mag=hi/ho
mag=-3.33/5
mag=-0.667

1/f=1/di+1/do
1/10=1/di+1/20
di=20cm

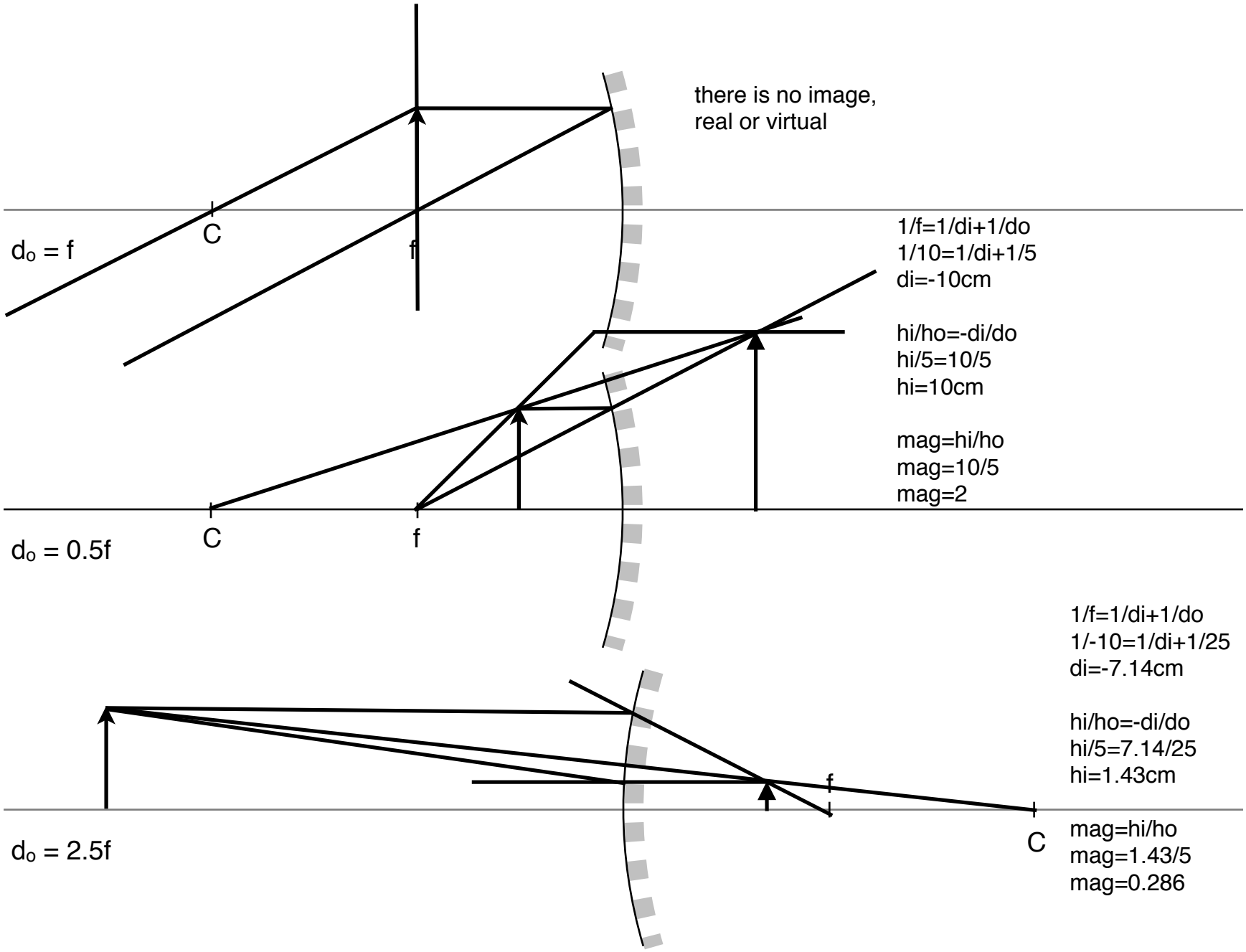
hi/ho=-di/do
hi/5=-20/20
hi=-5cm

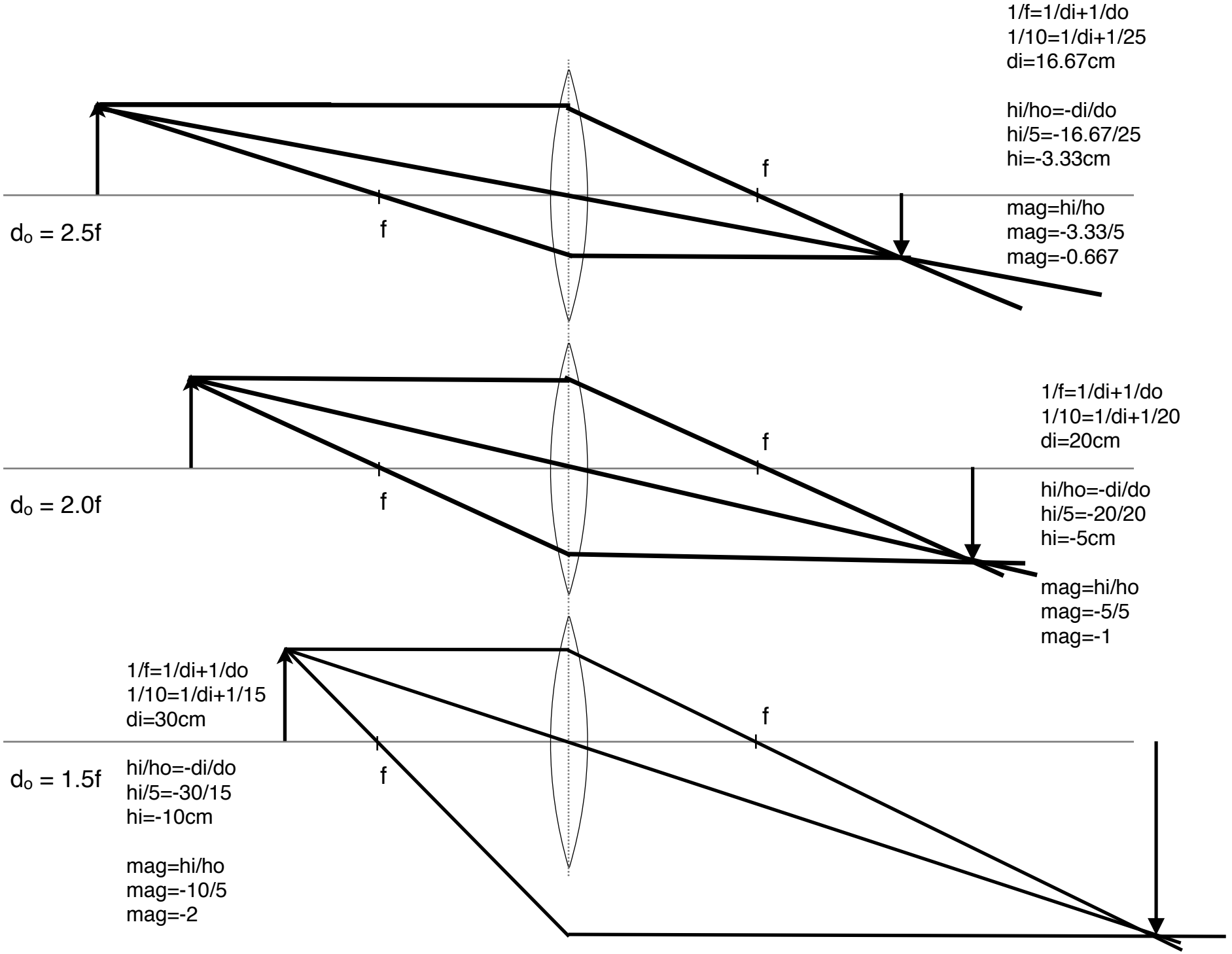
mag=hi/ho
mag=-5/5
mag=-1

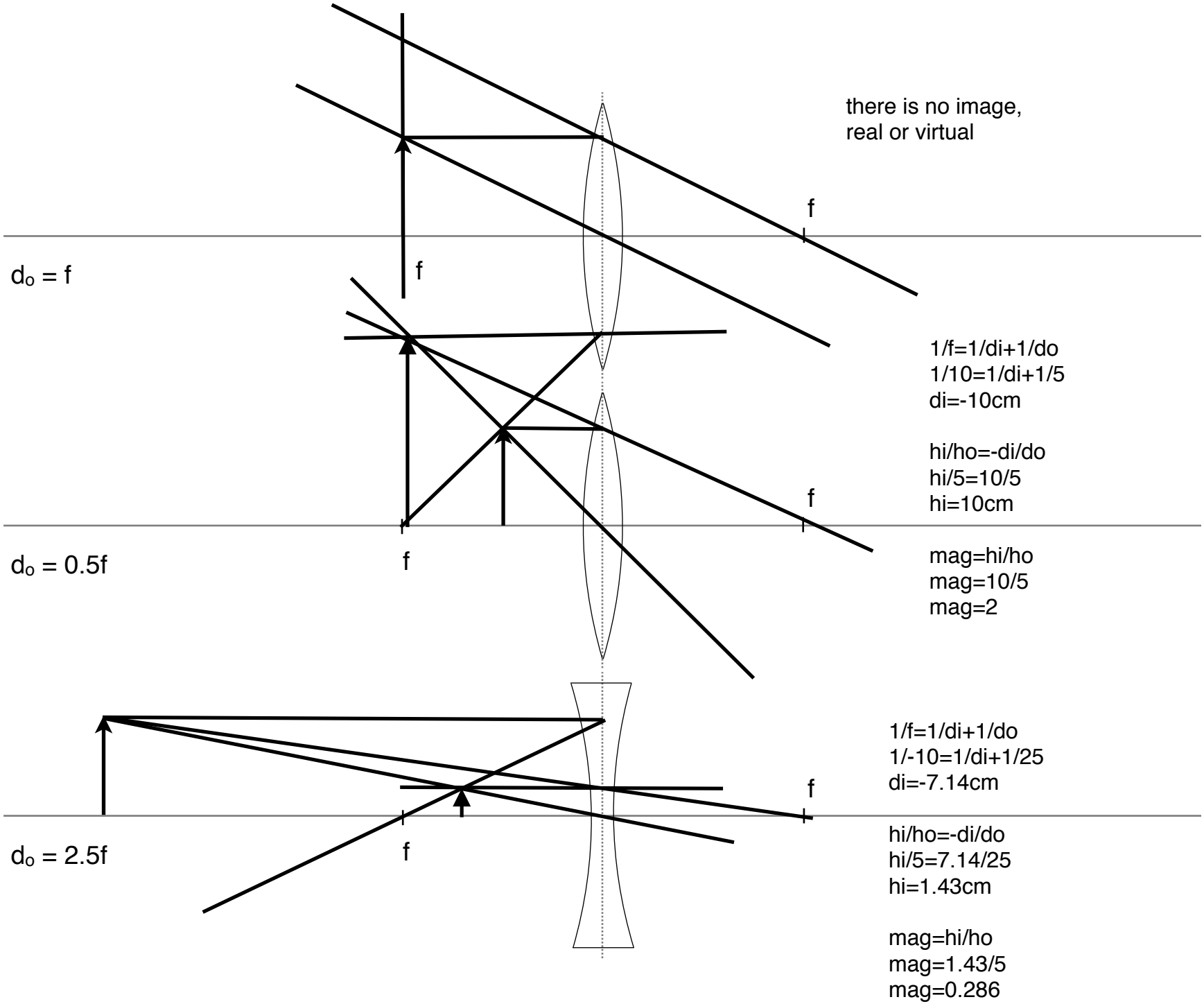
1/f=1/di+1/do
1/10=1/di+1/15
di=30cm

hi/ho=-di/do
hi/5=-30/15
hi=-10cm

mag=hi/ho
mag=-10/5
mag=-2


there is no image,
real or virtual
$d_o = f$
C
f
1/f=1/di+1/do
1/10=1/di+1/5
di=-10cm
hi/ho=-di/do
hi/5=10/5
hi=10cm
mag=hi/ho
mag=10/5
mag=2
C
f
$d_o = 0.5f$
1/f=1/di+1/do
1/-10=1/di+1/25
di=-7.14cm
hi/ho=-di/do
hi/5=7.14/25
hi=1.43cm
f
C
mag=hi/ho
mag=1.43/5
mag=0.286
$d_o = 2.5f$


1/f=1/di+1/do
1/10=1/di+1/25
di=16.67cm
hi/ho=-di/do
hi/5=-16.67/25
hi=-3.33cm
mag=hi/ho
mag=-3.33/5
mag=-0.667
f
f
do = 2.5f
1/f=1/di+1/do
1/10=1/di+1/20
di=20cm
hi/ho=-di/do
hi/5=-20/20
hi=-5cm
mag=hi/ho
mag=-5/5
mag=-1
f
f
do = 2.0f
1/f=1/di+1/do
1/10=1/di+1/15
di=30cm
hi/ho=-di/do
hi/5=-30/15
hi=-10cm
mag=hi/ho
mag=-10/5
mag=-2
f
f
do = 1.5f


there is no image,
real or virtual
f
f
$d_o = f$
1/f=1/di+1/do
1/10=1/di+1/5
di=-10cm
hi/ho=-di/do
hi/5=10/5
hi=10cm
f
f
$d_o = 0.5f$
mag=hi/ho
mag=10/5
mag=2
1/f=1/di+1/do
1/-10=1/di+1/25
di=-7.14cm
f
f
$d_o = 2.5f$
hi/ho=-di/do
hi/5=7.14/25
hi=1.43cm
mag=hi/ho
mag=1.43/5
mag=0.286