Physics 322

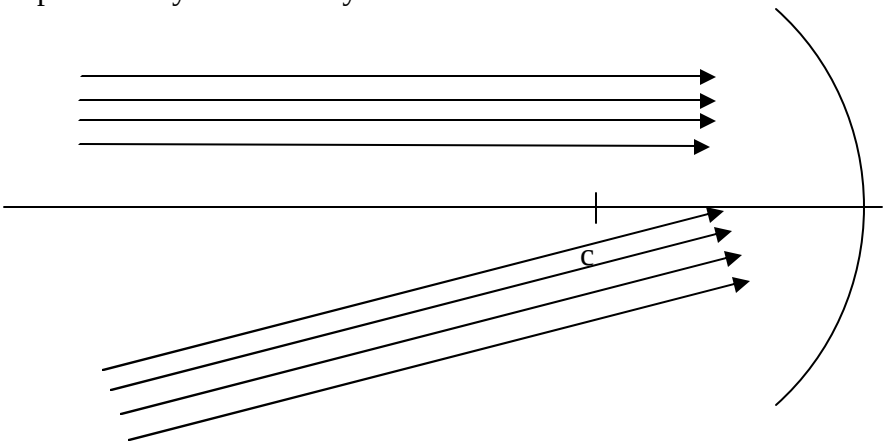
Consider a group of parallel light rays. Do these rays ever cross?

What type of source has rays that never cross?

Based on this information, consider a group of parallel rays incident on a concave mirror. Where will those rays go after being reflected from the mirror? How do you know?

Is an image formed in this circumstance? If so describe the image and its source. If not, why is there no image formed? Explain your answer.

Consider this situation. Determine where each of the groups of rays will go after reflecting from the mirror. Explain how you arrive at your answer.



1. Light which is parallel to the optic axis must cross the optic axis at _____

_____

Consider Fermat's principle for determining the path that light will follow upon reflection or refraction. If the light starts at A and travels to B originally, what do you think would happen to the result from Fermat's principle if the light started at B and travels to A?

Based on this observation, attempt to write down the principle of optical reversibility.

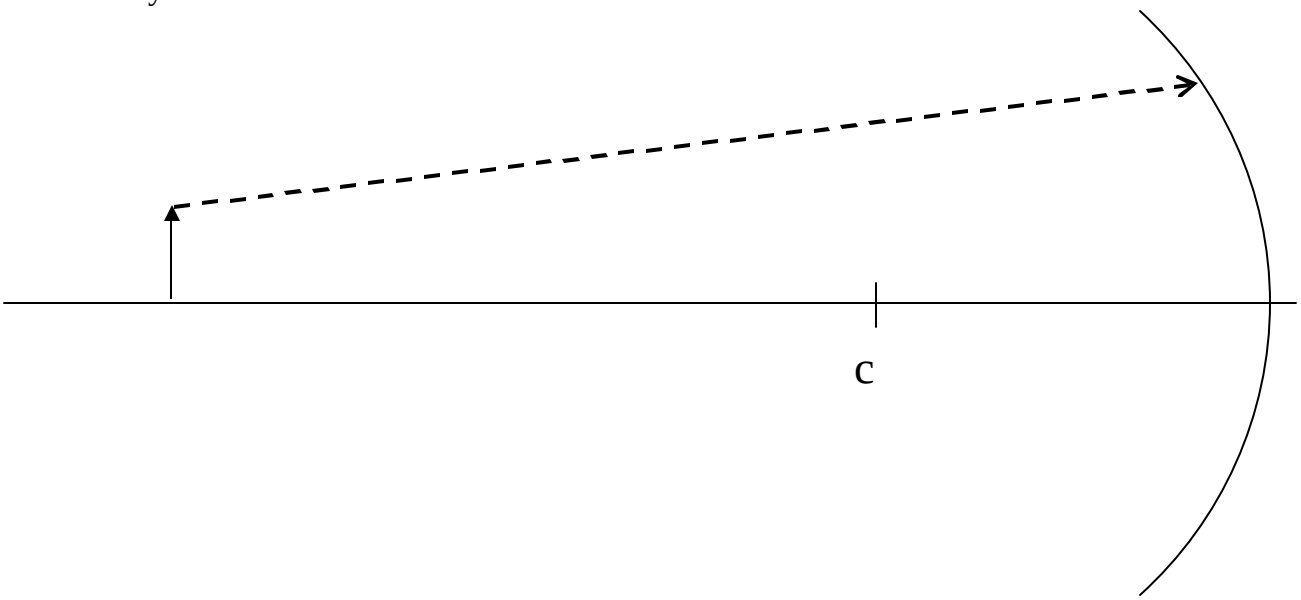
2. Light that appears to start at the focal point (c/2) must leave the mirror _____

_____

3. Light that appears to start at the center of curvature (c) will always be _____

to the mirror normal and therefore it will be reflected _____

Based on these rules, determine the location of the image of a single point on the object through ray tracing. What have you determined in this situation?

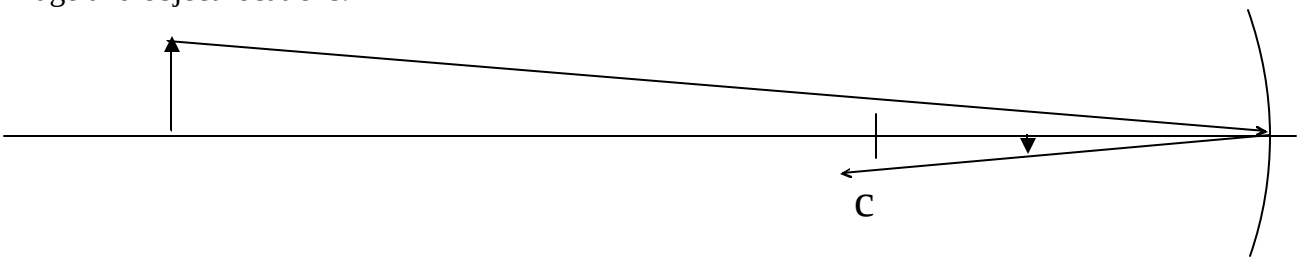


Why can you use this approach to determine the location of the whole image? Explain.

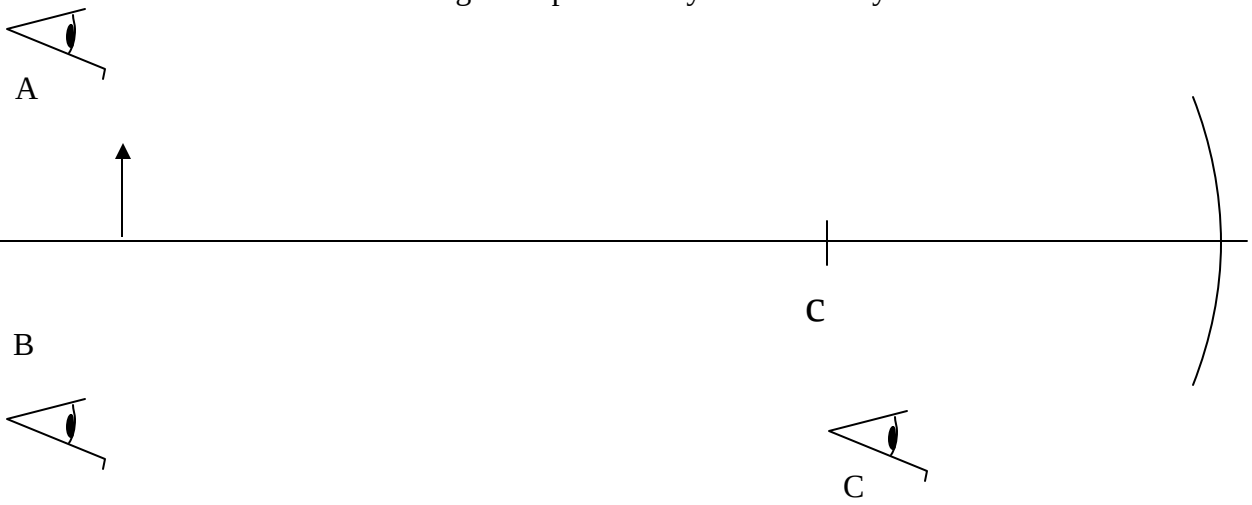
Use the equations for a mirror to determine the location of the image.

Determine the path of the ray that is drawn on the diagram.

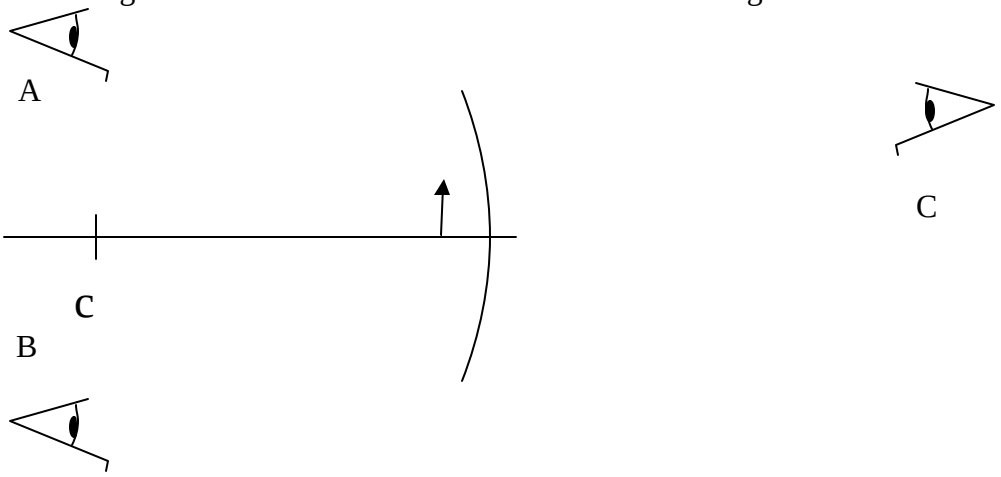
The lateral magnification could be determined by the ratio of the height of the image to the height of the object and including a sign to indicate orientation. Based on the diagram shown below, relate the magnification to the image and object locations.



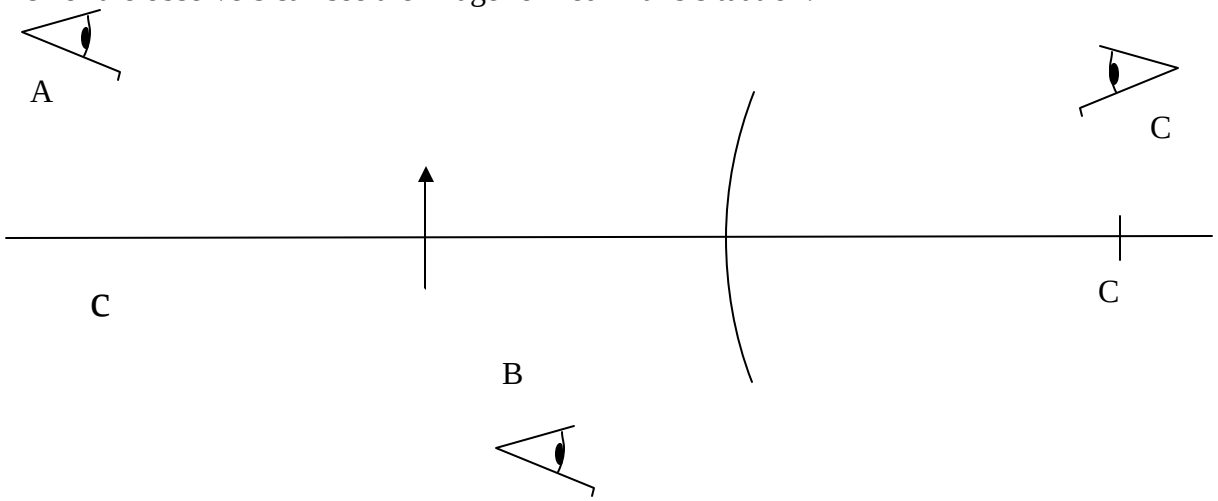
Which of the observers can see the image? Explain how you arrived at your answer



Find the image and determine which observer can see the image.



Which of the observers can see the image formed in this situation?



Calculate the image location and magnification using the equations we have determined previously.

Do the formula tell you who can see an image?