EXERCISE 3 — SOLUTION

1. Virtual Reality

Define the term *Virtual Reality*.

Solution

see lecture slides

2. Input Devices

Why are classical input devices like keyboard and mouse not well suited for an application in *Virtual Reality*?

Solution

see lecture slides

3. Virtual Reality in Medicine

Explain three situations where *Virtual Reality* applications are beneficial in the medical area.

Solution

see lecture slides

4. Virtual Reality vs. Computer Graphics

Give three main differences between *Virtual Reality* and *Computer Graphics*.

Solution

see lecture slides

5. Depth Cues

Name and describe three psychological cues that provide depth perception in traditional computer graphics.

Solution

see lecture slides

6. Depth Cues

Name and describe three physiological cues that provide depth perception in virtual rality.

Solution

see lecture slides

7. Rendering Pipeline

Name and describe three steps of the rendering pipeline that reduce the amount of processed surface area.

Solution

see lecture slides

8. Projection

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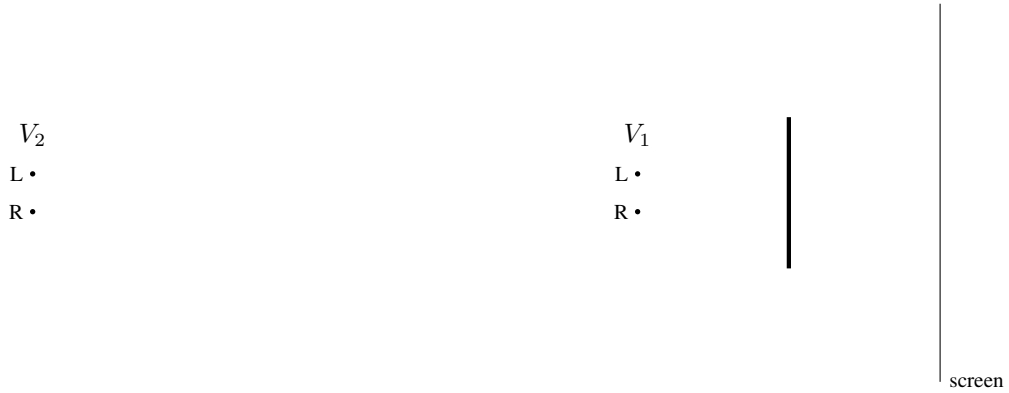
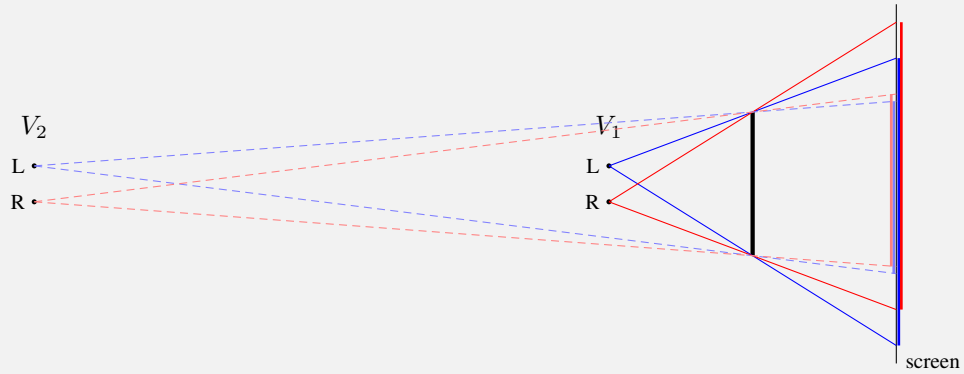
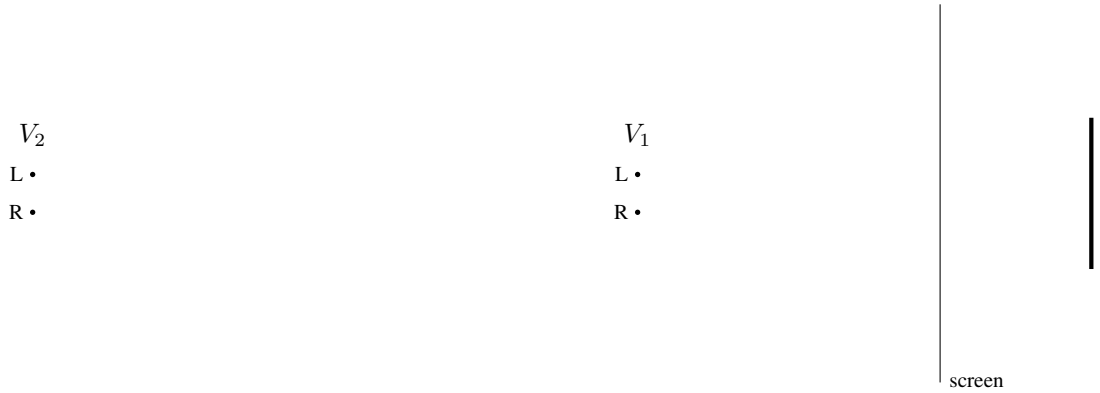
(a) Construct the projection of the bold line onto the projection screen for the viewer positions V_1 and V_2.



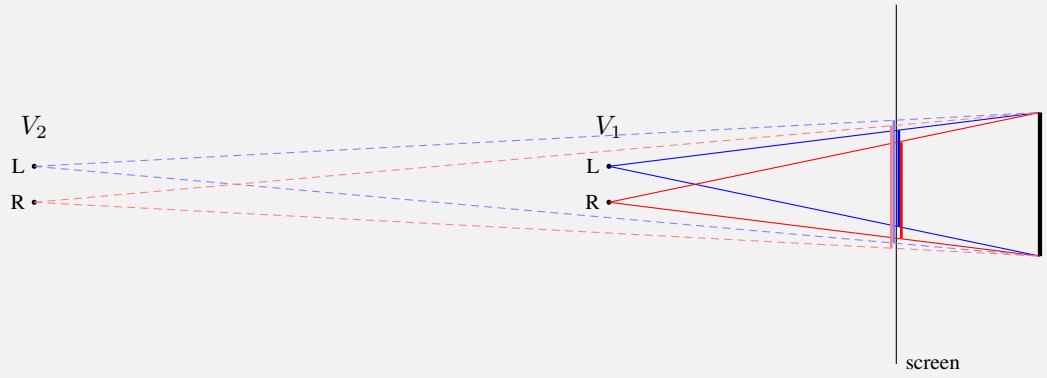
Solution



(b) Construct the projection of the bold line onto the projection screen for the viewer positions V_1 and V_2.



Solution



(c) Comment on the differences of the above results.

Solution

For an object in front of the screen

- The left eye's image is shifted to the right. The the right eye's image is shifted to the left.
- The closer the viewer to the object, the larger the image.
- The closer the viewer to the object, the larger the shift.

For an object in behind the screen

- The left eye's image is shifted to the left. The the right eye's image is shifted to the right.
- The closer the viewer to the object, the smaller the image.
- The closer the viewer to the object, the larger the shift.