

## Solution to HW3 of PHYS 3038

**5.54**  $S_{i1} = 62.5 \text{ cm}$ , the first image is formed after (to the right of) the lens;  
 $S_{i2} = -187.5 \text{ cm}$ , the second image is formed behind the mirror  
 $S_{i3} = 56.5 \text{ cm}$ , the third image is formed before (to the left of) the lens.

**5.57**  $n = 2$ .

**5.65**  $S_{i1} = 100 \text{ cm}$ , to the left of the primary lens;  
 $S_{i2} = 150 \text{ cm}$ , to the right of the secondary lens;  
Effective focal length is 75 cm.

**5.75** The equivalent focal length for human eye is 17.1mm. So  $y_i = 0.16 \text{ mm}$ .

**6.1** The proof is trivial.

**6.10**  $f = 30 \text{ cm}$ ,  $S_o = 50 \text{ cm}$  (or 51.8 cm). Hence  $S_i = 75 \text{ cm}$ , that is, 74.6 cm behind the back side of the lens.