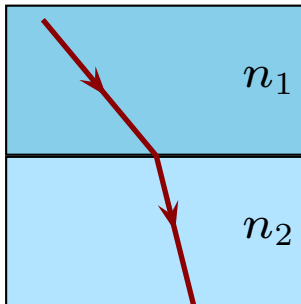


# Question 1

A beam of light travels from one medium to another as illustrated.

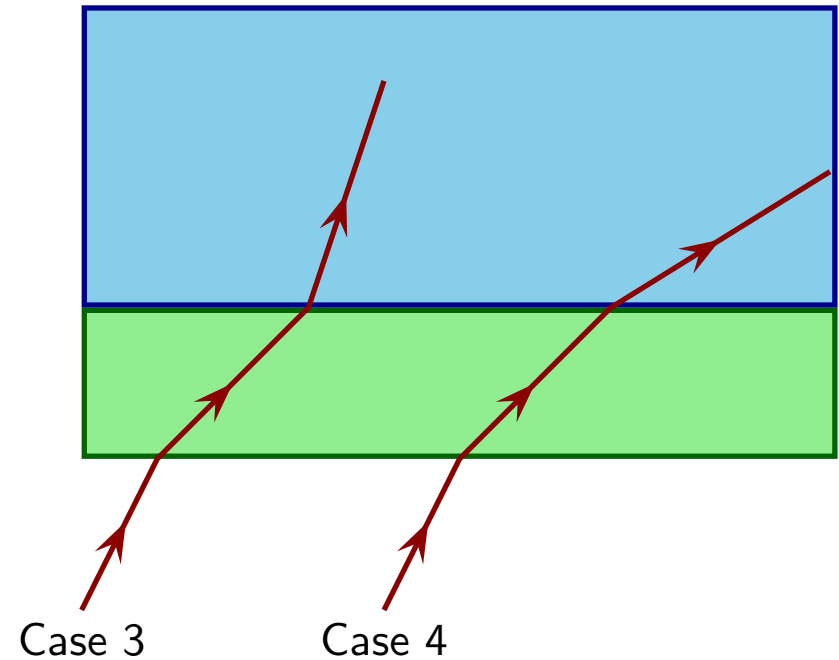
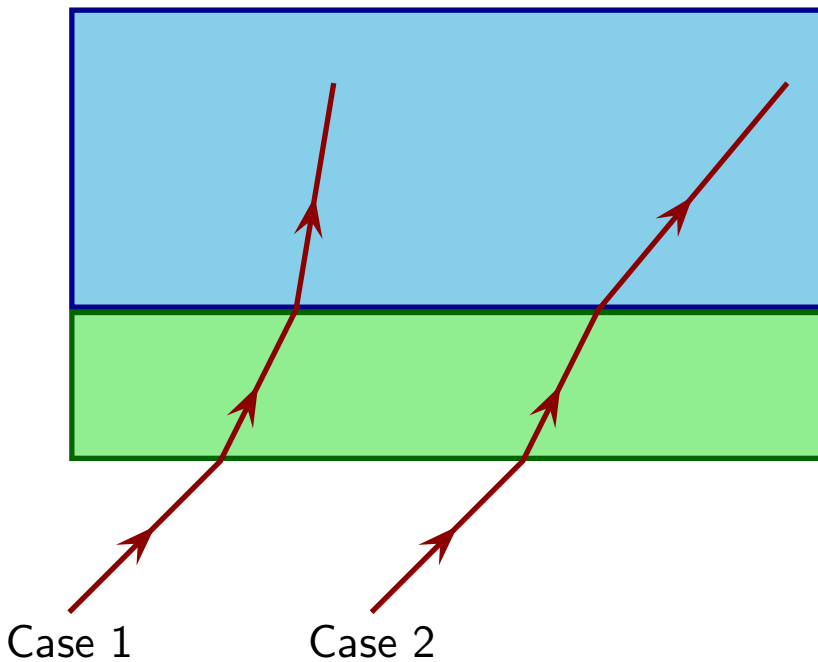


Which of the following is true about the indices of refraction.

1. Definitely  $n_1 > n_2$ .
2. Definitely  $n_1 < n_2$ .
3. Definitely  $n_1 = n_2$ .
4. One cannot say with certainty if  $n_1 > n_2$ , or  $n_1 < n_2$ .

## Question 2

Light passes from air ( $n = 1.00$ ) into glass ( $n = 1.52$ ) and then into water ( $n = 1.33$ ). Which of the following indicates a possible trajectory of the light ray?



## Question 3

The indices of refraction for various substances are given below:

Air	1.00
Water	1.33
Benzene	1.50

Which of the following is/are true?

1. Total internal reflection is possible for light passing from water to air but not benzene to air.
2. Total internal reflection is possible for light passing from benzene to air but not water to air.
3. Total internal reflection is possible for light passing from benzene to air and water to air.
4. Total internal reflection is possible for light passing from air to water but not benzene to water.
5. Total internal reflection is possible for light passing from air to benzene but not air to water.
6. Total internal reflection is possible for light passing from air to benzene and air to water.

## Question 4

The indices of refraction for various substances are given below:

Air	1.00
Water	1.33
Benzene	1.50

Which of the following is/are true?

1.  $\theta_c$  for the air/benzene combination is the same as that for the air/water combination.
2.  $\theta_c$  for the air/benzene combination is larger than that for the air/water combination.
3.  $\theta_c$  for the air/benzene combination is smaller than that for the air/water combination.