

PHYSICS 1020

Homework #10

(Due May 10, 2010)

1. (Giancoli 23-29) Rays of the Sun are seen to make a $31^\circ 0'$ angle to the vertical beneath the water. At what angle above the horizon is the Sun?
2. (Giancoli 23-37) The critical angle for a certain liquid-air surface is $47^\circ 7'$. What is the index of refraction of the liquid?
3. (Giancoli 23-47) A stamp collector uses a converging lens with focal length 24 cm to view a stamp 18 cm in front of the lens. (a) Where is the image located? (b) What is the magnification?
4. (Giancoli 23-66) A double concave lens has surface radii of 34.2 cm and 23.8 cm. What is the focal length if $n = 1.52$?
5. (Giancoli 23-74) The critical angle (for total internal reflection) of a certain piece of plastic in air is $\theta_C = 37^\circ 3'$. What is the critical angle of the same plastic if it is immersed in water?