HW due 7/18

Due: 7:00am on Monday, July 18, 2016

To understand how points are awarded, read the Grading Policy for this assignment.

Exercise 33.10

Part A

A tank containing methanol has walls 2.50 cm thick made of glass of refractive index 1.550. Light from the outside air strikes the glass at a 41.3° angle with the normal to the glass. Find the angle the light makes with the normal in the methanol. Methanol has a the refractive index of 1.329.

ANSWER:

θ = 29.8 °

Correct

Part B

The tank is emptied and refilled with an unknown liquid. If light incident at the same angle as in part (a) enters the liquid in the tank at an angle of 20.2° from the normal, what is the refractive index of the unknown liquid?

ANSWER:

n = 1.91

Correct

Exercise 34.14

Consider a convex spherical mirror that has focal length $f = -8.00\ \text{cm}$.

Part A

What is the distance of an object from the mirror's vertex if the height of the image is half the height of the object? Follow the sign rules.

Express your answer with the appropriate units.

ANSWER:

s = 8.00 cm

Correct

Exercise 35.23

Part A

What is the thinnest film of a coating with n = 1.38 on glass ($n = 1.52$) for which destructive interference of the red component (660 nm) of an incident white light beam in air can take place by reflection?

ANSWER:

t = 120 nm

Correct

Score Summary:

Your score on this assignment is 100%.
You received 15 out of a possible total of 15 points.