1 Garreft Haldryp

General Physics II (PHYS 112) Fall 2024

Reading Quiz 3, due Sunday, November 24, 2024, at 11:59 pm. This is a firm deadline.

Read Chapters 28 - 30 and answer the following questions.

1.	
	What is the angle of reflection?
	(A) 15°
	(₽) 30°
	(C) 60°
	(D) 70°
	(E) 80°
2.	(1 point) When light moves from a medium where its speed is higher to a different medium where its speed is slower, the refracted ray is bent (A) away from the normal.
	(a) toward the normal $N_1 \leq N_2 \leq N_3 \leq N_4 \leq $
	(C) along the normal.
	(D) along the surface.) $s_{in}30 = 1.5 s_{in} \theta z$
	(E) perpendicular to the normal. $a_{Sin}\left(\frac{s_{im}^{30}}{1.5}\right) = \Theta_z$
	(E) perpendicular to the normal. $a_{Sin}\left(\frac{\sin^{30}}{1.5}\right) = \theta_{z}$ $\theta_{z} \approx 20^{\circ}$

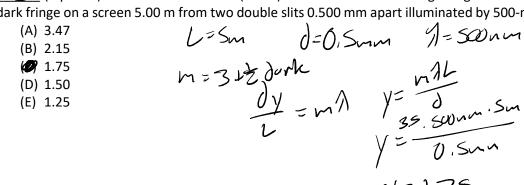
3. _____ (1 point) The passenger-side rear view mirror on a car says, "Objects in the mirror may be closer than they appear". Assuming the images are not inverted, this mirror must be:

- (A) concave
- (B) plane
- (convex
- (D) mounted on the wrong side of the car
- (E) confused, as objects cannot be closer than they appear

4. (1 point) Which of the following best describes the image for a thin convex lens that forms whenever the object is at a distance less than one focal length from the lens?

- (A) inverted, enlarged and real
- (upright, enlarged and virtual
- (C) upright, diminished and virtual
- (D) inverted, diminished and real.

5. ____ (2 points) Estimate the distance (in cm) between the central bright region and the third dark fringe on a screen 5.00 m from two double slits 0.500 mm apart illuminated by 500-nm light.



6. _____ (1 point) If a wave from one slit of a Young's double-slit set-up arrives at a point on the screen one-half wavelength behind the wave from the other slit, what is observed at that point?

- (dark fringe
- (B) bright fringe
- (C) multi-colored fringe
- (D) gray fringe, neither dark nor bright
- (E) none of the above
- 7. (3 points) A doctor examines a mole with a 15.0 cm focal length magnifying glass held 11 cm from the mole. (a) Where is the image? (b) What is its magnification? (c) How big is the image of a 7.2 mm diameter mole?
- 8. (2 points) A Young's double slit has a slit separation of 2.50×10^{-5} m on which a monochromatic light beam is directed. The resultant bright fringes on a screen 1.00 m from the double slit are separated by 2.30×10^{-2} m. What is the wavelength of this beam? (1 nm = 10^{-9} m)
- 9. (2 points) Light of wavelength 625 nm shines through a single slit of width 0.320 mm and forms a diffraction pattern on a flat screen located 8.00 m away. Determine the distance between the middle of the central bright fringe and the first dark fringe.
- 10. (3 points) A diffraction grating is 1.5 cm wide and contains 2100 lines. When used with light of a certain wavelength, a third-order maximum is formed at an angle of 15.0°. What is the wavelength (in nm)?

7)
$$f = 15cm$$
 $P = 11cm$
a) $f = \frac{1}{p} + \frac{1}{q} = \frac{1}{q} - \frac{1}{p} = \frac{1}{15m} - \frac{1}{16m} = -2.41.25cm$
b) $m = \frac{q}{p} = \frac{41.25cm}{11cm} = -3.75$
c) $h = 7.2cm$ $\frac{h'}{h} = m$ $\frac{h'}{72m} = -3.75$ $h' = -27cm$
8) $J = 2.5 \times 0^{-5} m$ $L = 1m$ $y = 2.3cm$

$$9 \ \lambda = 625 \text{nm} \ U = 0.32 \text{nm} \ l = 8 \text{m} \ m = 1$$

$$9 = \frac{AL}{U} = \frac{625 \text{nm} \cdot 8 \text{m}}{0.32 \text{nm}} = 1.56 \text{cm}$$

$$\frac{100}{100} = 1.5 \text{ cm N} = \frac{2100}{100} \text{ m} = 3 \quad \theta = 15^{\circ} \quad \theta = \frac{1.5 \text{ cm}}{200} = 7.14 \text{ pm}$$

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