Chapter 21 Quiz

Which of the following has nothing to do with EM waves?

- (a) Dental x-rays
- (b) Radio broadcasting
- (c) Strumming a guitar
- (d) Cooking a microwave dinner
- (e) Responding with your HITT transmitter
A grain of interplanetary dust is in the Sun’s gravitational field. Ignoring all other influences, is it possible for the grain to move away from the Sun?

- (a) Yes, if the grain is sufficiently large
- (b) Yes, if the grain is sufficiently small
- (c) No, it cannot escape the Sun’s gravitational field
Chapter 21 Quiz

Which statement is true? The energy carried by an electromagnetic wave in a vacuum

- (a) propagates at the speed of light
- (b) consists of only electric field contributions
- (c) propagates along the direction of the electric field
- (d) consists of E and B fields pointing in the same direction
- (e) none of the above
Chapter 22: Reflection

Law of reflection

- Incident ray, reflected ray, normal lie in one plane
- $\theta'_1 = \theta_1$
Reflection Law Applies to non-Flat Surfaces
Chapter 22: Refraction

- Index of refraction $n$ and speed of light in medium
  \[ v = \frac{c}{n} \]

- Law of refraction (Snell’s law)
  - Incident ray, refracted ray, normal lie in one plane
  - $n_1 \sin \theta_1 = n_2 \sin \theta_2$
Refraction at Air-Water Interface

\[ n_1 \sin \theta_1 = n_2 \sin \theta_2 \]

\[ \sin \theta_2 = \frac{\sin \theta_1}{1.333} \]

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<th>( \theta_1 )</th>
<th>( \theta_2 )</th>
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<tr>
<td>0°</td>
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Critical angle (more later)