

Wednesday, January 8/14
Physics 112/111

No IS Today or Tomorrow

1. Exam Review - Problem
 2. Check Worksheet - Refraction #1, 2
 3. Wave Behaviours: Refraction
 - three cases -> continue
 - Snell's Law
 - critical angle
 - total internal reflection
 4. [HW: Worksheet - Refraction #3-13](#)
 5. Wave Behaviours: Interference
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Exam Review - Problem

30.1 s

Concept: impulse-momentum

A 1.00×10^4 kg freight car is rolling westward along a track at 3.00 m/s. Calculate the time needed for a force with a magnitude of 998 N to stop the freight car.

$m = 1.00 \times 10^4 \text{ kg}$
 $\vec{v}_i = (-) 3.00 \text{ m/s}$
 $t = ?$
 $F = 998 \text{ N}$
 $\vec{v}_f = 0$

$\vec{J} = \vec{F}t = \Delta \vec{p}$
 $\vec{J} = \Delta \vec{p}$
 $\vec{F}t = m\vec{v}_f - m\vec{v}_i$
 $t = \frac{m\vec{v}_f - m\vec{v}_i}{\vec{F}}$
 $t = \frac{-m\vec{v}_i}{\vec{F}}$

$t = \frac{-(1.00 \times 10^4)(-3.00)}{998}$
 $t = 30.1 \text{ s}$

(2) motion prob.
 (3) forces.
 (4) momentum impulse
 (6) work energy conservation
 (8) waves.

$$\vec{F}_{\text{net}} = m\vec{a}$$

$$\vec{a} = \frac{\vec{v}_f - \vec{v}_i}{t}$$