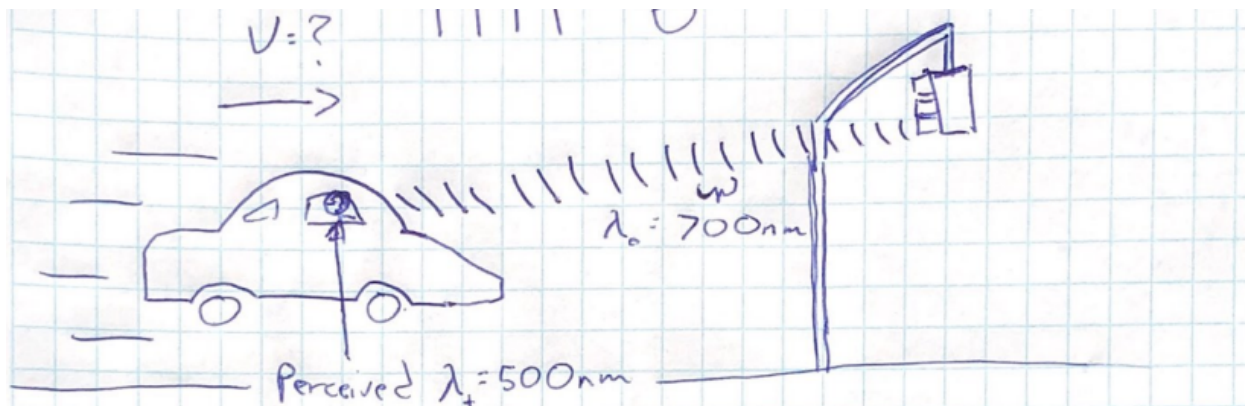


HIP 6



At what speed must the car go to shift the stop light from red to green?

$$\lambda_+ = \lambda_o \sqrt{\frac{1 - v/c}{1 + v/c}} \rightarrow v = \frac{\left(\frac{\lambda_+}{\lambda_o}\right)^2 + 1}{\left(\frac{\lambda_+}{\lambda_o}\right)^2 - 1} c$$

$$c = 299792458 \text{ m/s}$$

$$v = 9.7 \times 10^7 \text{ m/s} \rightarrow 3.492 \frac{\text{km}}{\text{hr}} \times 10^8$$

How much is the speeding ticket if the fine is \$100 for every $10 \frac{\text{km}}{\text{hr}}$ over $60 \frac{\text{km}}{\text{hr}}$?

$$\frac{(v - 60) \cdot 100}{10} = 3.49 \times 10^9 \text{ dollars}$$

Lecture Time:

Name:

CATEGORY	EXEMPLARY (1.5)	ACCOMPLISHED (1)	DEVELOPING (0.5)	EMERGENT (0)
Problem Statement and Introduction	A new learning tool for our class is written	The problem is clearly presented for reader in your own words.	The problem is directly copied or is hard to follow.	You jump into some calculation
Picture	Your sketch could be dropped into a graphic novel as it stands.	There is a clear sketch, larger than a credit card, of the problem set up with important features and data noted	There is some sketch of the problem setup	What sketch?
Physics Tools	Appropriate physics tools are correlated to the exercise in textbook quality and size	Appropriate physics tools are correlated to the exercise. Appropriate tools include: pictures, FBDs, conservation laws utilized, etc.,	Some physics tools are correlated to the exercise.	There are a few equations written.
Problem Solution Presentation	Solution is very clearly presented with intriguing asides or annotations	Solution is complete and clearly presented making no significant intuitive demands on the reader.	In your solution I have to read between the lines	Cliff notes version of solution with only high points present
Form	Your solution can serve as solution manual.	Drawing is larger than a credit card, organization is fluid, notation used is clear.	I could figure the path of your solution with effort.	You can read it.
Units		All units correctly given	Calculations & quantities are presented with units	Some units at the results
Solution		Correct	You are close	None/Not reasonable
Significant Figures		Correct Sig Figs	Makes effort to use correct significant figures	Copies the number from the calculator
Reasonableness	Provides more than one type of Reasonableness check.	Gives one clear rationale for appropriateness of the solution in the setting	Asserts that the answer is reasonable but really hasn't given any evidence	No discussion
All Self Graded		Done	Not Done	Done, but your self-assessment is different from mine by at least two steps.