

# Special Relativity Practice Problems And Solutions

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## Special Relativity Practice Problems And

Given here are solutions to 24 problems in Special Relativity. The solutions were used as a learning-tool for students in the introductory undergraduate course Physics 200 Relativity and Quanta given by Malcolm McMillan at UBC during the 1998 and 1999 Winter Sessions.

## Solved Problems in Special Relativity

Special Relativity Lecture Notes. Special Relativity Practice Problems. The Super Fast Computer Chip; Street Lamps; The Hare and the Tortoise 1; The Hare and the Tortoise 2; The Hare and the Tortoise 3; Train and Tunnel; The Enterprise and the Klingon Battle Cruiser; The Enterprise and the Klingon Battle Cruiser 2 (12/2/04) The Duel of the Klingon Battle Cruisers

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## Special Relativity Practice Problems - Virginia Tech

lecture notes on special relativity. The Super Fast Computer Chip. A person comes to you claiming that he/she has invented a microchip 1 cm square in size which can run at a clock speed of 300,000 GHz.

### Special Relativity Practice Problem 1

Special Relativity Questions & Problems (Answers) 1. If you were on a spaceship travelling at  $0.50c$  away from a star, what speed would the starlight pass you? (The speed of light:  $3.00 \times 10^8$  m/s) 2. Does time dilation mean that time actually passes more slowly in moving references frames or that it only seems to pass more slowly?

### Special Relativity Questions & Problems (Answers)

Essential Physics Chapter 26 (Special Relativity) Solutions to Sample Problems PROBLEM 1 - 15 points According to Bob, an observer on Earth, a rocket carrying Martha from Earth directly to the planet Zorg travels at a speed of  $0.80 c$  and takes 30 years to reach Zorg. Zorg is at rest relative to the Earth.

### PROBLEM 2 - 20 points

Modern Physics Problems. Two areas of modern physics are addressed through example problems on this page. Special Relativity problems ask you to relate the observations of two observers measuring the same thing. In Quantum Mechanics problems, you may look at wave or particle behavior of light and subatomic particles.

### Modern Physics Problems - Physics - University of ...

Welcome to the course web site for PHY206 special relativity. Course materials are below. Lecture 1 - Motivation, and some pre-relativity physics. ... Problems. Problem class 1 exercise. Problem class 2 exercise. ... Lecture 12 - 2nd revision lecture. Practice exam questions, and some solutions. Solutions to above practice questions, revised ...

### PHY206 - Special Relativity

Don't show me this again. Welcome! This is one of over 2,200 courses on OCW. Find materials for this course in the pages

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linked along the left. MIT OpenCourseWare is a free & open publication of material from thousands of MIT courses, covering the entire MIT curriculum.. No enrollment or registration.

## Exams | Introduction to Special Relativity | Physics | MIT

...

Problem Set 7 Solution Quick overview: Although relativity can be a little bewildering, this problem set uses just a few ideas over and over again, namely 1. Coordinates  $(x;t)$  in one frame are related to coordinates  $(x_0;t_0)$  in another frame by the Lorentz transformation formulas. 2.

## Answer - Open Yale Courses

Example Problems Applets and Animations Student Learning Objectives. To understand the two postulates of special relativity. To understand how the principle of relativity leads to time dilation and length contraction. To understand and reason with the fundamental concepts of event simultaneity and reference frames.

## Special Relativity - Cabrillo College

One of the most notable tests took place in the 1970's in which scientists equipped commercial airlines with high-precision atomic clocks as they trotted across the globe. As predicted by relativity, the clocks measured less time while in flight compared to clocks on the ground.

## Special Relativity | Brilliant Math & Science Practice ...

Which of Einstein's postulates of special relativity includes a concept that does not fit with the ideas of classical physics? Explain. 2. Is Earth an inertial frame of reference? Is the Sun? Justify your response. 3. When you are flying in a commercial jet, it may appear to you that the airplane is stationary and the Earth is moving beneath you.

## 28: Special Relativity (Exercises) - Physics LibreTexts

The concepts of special relativity might seem extraordinarily basic, but the consequences are far reaching when you analyze them mathematically. There are three main consequences we can use in...

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## **Einstein's Special Theory of Relativity: Analysis ...**

Visit <http://ilectureonline.com> for more math and science lectures! In this video I will find time=? for a space ship, pursued by an enemy, to make it back ...

## **Physics - Special Relativity (35 of 43) Relativistic ...**

Time dilation, in the theory of special relativity, the “slowing down” of a clock as determined by an observer who is in relative motion with respect to that clock. In special relativity, an observer in inertial (i.e., nonaccelerating) motion has a well-defined means of determining which events occur simultaneously with a given event. A second inertial observer, who is in relative motion ...

## **time dilation | Explanation, Examples, & Twin Paradox ...**

Problem solving - use what you've learned about relativity to solve practice math problems  
Information recall - access the knowledge you've gained about Einstein's theory of special relativity

## **Quiz & Worksheet - Einstein's Special Theory of Relativity**

...

Part I Special Relativity G. W. Gibbons D.A.M.T.P., Cambridge University, Wilberforce Road, Cambridge CB3 0WA, U.K. February 14, 2008 The views of space and time which I wish to lay before you have sprung from the soil of experimental physics, and therein lies their strength. They are radical.

## **Part I Special Relativity - DAMTP**

Homework Problems . 9. General Relativity in a Nutshell . 11. 2.EVIEW OF SPECIAL RELATIVITY R 13 Concept Summary . 14. Box 2.1verlapping IRFs Move with Constant Relative Velocities O . 19. Box 2.2nit Conversions Between SI and GR Units U . 20. Box 2.3ne Derivation of the Lorentz Transformation O . 21. Box 2.4orentz Transformations and Rotations ...

## **A GENERAL RELATIVITY WORKBOOK**

(relativity being too controversial then). Einstein wrote two theories of relativity; the 1905 work is known as “special

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relativity” because it deals only with the special case of uniform (i.e. non-accelerating) motion. In 1915 he published his “general theory of relativity”, dealing with gravity and acceleration. Strange things happen in accel-

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