



PROBLEM 2.49

Two cables are tied together at C and are loaded as shown. Knowing that $P = 300$ N, determine the tension in cables AC and BC .

SOLUTION

Free-Body Diagram



$$+\rightarrow \Sigma F_x = 0 \quad -T_{CA} \sin 30^\circ + T_{CB} \sin 30^\circ - P \cos 45^\circ - 200 \text{ N} = 0$$

For $P = 200$ N we have,

$$-0.5T_{CA} + 0.5T_{CB} + 212.13 - 200 = 0 \quad (1)$$

$$+\uparrow \Sigma F_y = 0 \quad T_{CA} \cos 30^\circ - T_{CB} \cos 30^\circ - P \sin 45^\circ = 0$$

$$0.86603T_{CA} + 0.86603T_{CB} - 212.13 = 0 \quad (2)$$

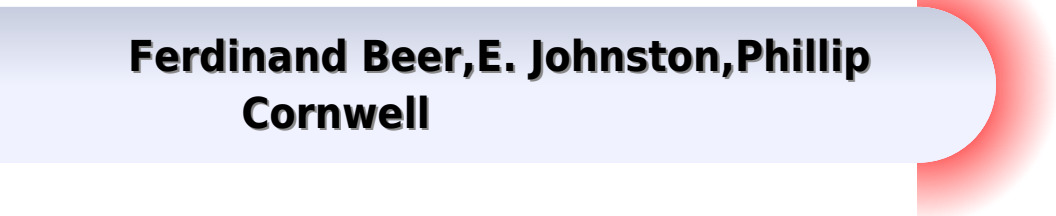
Solving equations (1) and (2) simultaneously gives,

$$T_{CA} = 134.6 \text{ N} \quad \blacktriangleleft$$

$$T_{CB} = 110.4 \text{ N} \quad \blacktriangleleft$$

Beer Johnston Vector Mechanics Solution Manual

**Ferdinand Beer, E. Johnston, Phillip
Cornwell**



Beer Johnston Vector Mechanics Solution Manual:

Vector Mechanics for Engineers Ferdinand Pierre Beer, Elwood Russell Johnston, 1972 **Solutions Manual to Accompany Vector Mechanics for Engineers, Statics, Third** Ferdinand P. Beer, Elwood Russell Johnston, Théodore Wildi, 1998 Introduction La statique des particules La statique des corps rigides systemes de forces equivalentes L equilibre des corps rigides Forces reparties centroides et centres de gravite Etudes des structures Forces dans les poutres et les cables Frottement Forces reparties moment d inertie Methode des travaux virtuels **Solutions Manual to Accompany Vector Mechanics for Engineers, Statics** Ferdinand Pierre Beer, Elwood Russell Johnston, 1982 EBOOK: Vector Mechanics for Engineers: Statics (SI units) Ferdinand Beer, E. Johnston, David Mazurek, 2012-10-16 Target Audience This text is designed for the first course in Statics offered in the sophomore year Overview The main objective of a first course in mechanics should be to develop in the engineering student the ability to analyze any problem in a simple and logical manner and to apply to its solution a few well understood basic principles This text is designed to help the instructor achieve this goal Vector analysis is introduced early in the text and is used in the presentation and discussion of the fundamental principles of mechanics Vector methods are also used to solve many problems particularly three dimensional problems where these techniques result in a simpler and more concise solution The emphasis in this text however remains on the correct understanding of the principles of mechanics and on their application to the solution of engineering problems and vector analysis is presented chiefly as a convenient tool In order to achieve the goal of being able to analyze mechanics problems the text employs the following pedagogical strategy Practical applications are introduced early New concepts are introduced simply Fundamental principles are placed in simple contexts Students are given extensive practice through sample problems special sections entitled Solving Problems on Your Own extensive homework problem sets review problems at the end of each chapter and computer problems designed to be solved with computational software Resources Supporting This Textbook Instructor s and Solutions Manual features typeset one per page solutions to the end of chapter problems It also features a number of tables designed to assist instructors in creating a schedule of assignments for their course The various topics covered in the text have been listed in Table I and a suggested number of periods to be spent on each topic has been indicated Table II prepares a brief description of all groups of problems Sample lesson schedules are shown in Tables III IV and V together with various alternative lists of assigned homework problems For additional resources related to users of this SI edition please visit <http://www.mheducation.com/beerjohnston> McGraw Hill Connect Engineering a web based assignment and assessment platform is available at <http://www.mhhe.com/beerjohnston> and includes algorithmic problems from the text Lecture PowerPoints an image bank and animations Hands on Mechanics is a website designed for instructors who are interested in incorporating three dimensional hands on teaching aids into their lectures Developed through a partnership between the McGraw Hill Engineering Team and the Department of Civil and Mechanical Engineering at the

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VECTOR MECHANICS FOR ENGINEERS: STATICS AND DYNAMICS, SI Ferdinand Beer, E. Johnston, David Mazurek, Phillip Cornwell, Brian Self, 2025-11-24 Vector Mechanics for Engineers helps students analyze problems in a simple and logical manner and then apply basic principles to their solutions encouraging a strong conceptual understanding of these basic principles Offering a unified presentation of the principles of kinetics and a systematic problem solving approach the text has proven to be an effective teaching tool especially when paired with the digital resources available in Connect The addition of Case Studies in every chapter are based on actual structures and systems include failures provide students with real world engineering applications And Sample Problems liberally used at the end of each lesson align with the SMART methodology to amplify the neat and orderly work students should cultivate in their own solutions

Solutions Manual to Accompany Vector Mechanics for Engineers, 1996 EBOOK: Vector Mechanics for Engineers: Dynamics (SI) Ferdinand Beer, E. Johnston, Phillip Cornwell, 2013-04-16 Continuing in the spirit of its successful previous editions the tenth edition of Beer Johnston Mazurek and Cornwell's Vector Mechanics for Engineers provides conceptually accurate and thorough coverage together with a significant refreshment of the exercise sets and online delivery of homework problems to your students Nearly forty percent of the problems in the text are changed from the previous edition The Beer Johnston textbooks introduced significant pedagogical innovations into engineering mechanics teaching The consistent accurate problem solving methodology gives your students the best opportunity to learn statics and dynamics At the same time the careful presentation of content unmatched levels of accuracy and attention to detail have made these texts the standard for excellence

Solutions Manual to Accompany Vector Mechanics for Engineers Ferdinand Pierre Beer, Elwood Russell Johnston, 1977

Instructor's and Solutions Manual to Accompany Vector Mechanics for Engineers Yohannes Ketema, 2007

Dynamics - Formulas and Problems Dietmar Gross, Wolfgang Ehlers, Peter Wriggers, Jörg Schröder, Ralf Müller, 2016-10-05 This book contains the most important formulas and more than 190 completely solved problems from Kinetics and Hydrodynamics It provides engineering students material to improve their skills and helps to gain experience in solving engineering problems Particular emphasis is placed on finding the solution path and formulating the basic equations Topics include Kinematics of a Point Kinetics of a Point Mass Dynamics of a System of Point Masses Kinematics of Rigid Bodies Kinetics of Rigid Bodies Impact Vibrations Non Inertial Reference Frames Hydrodynamics

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