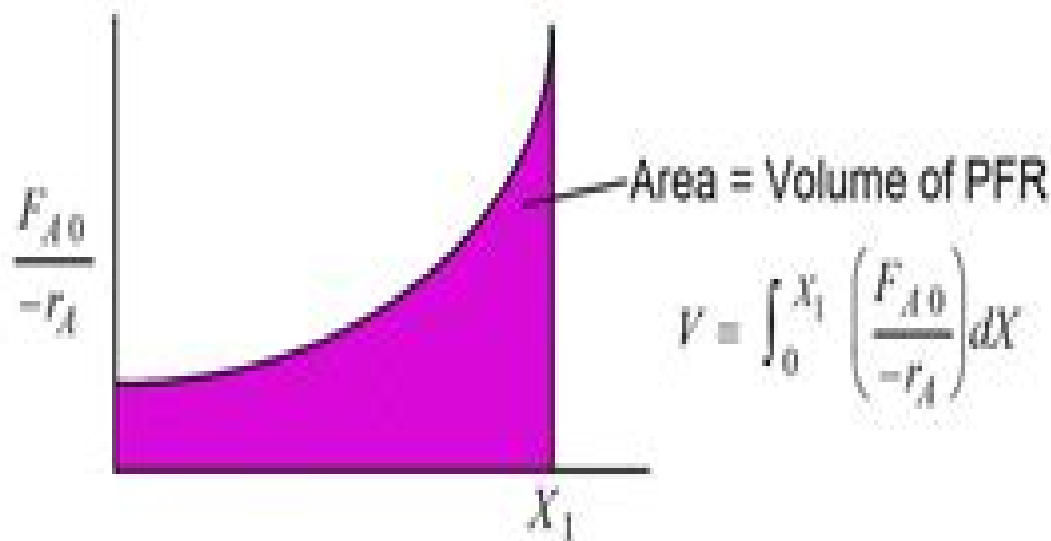
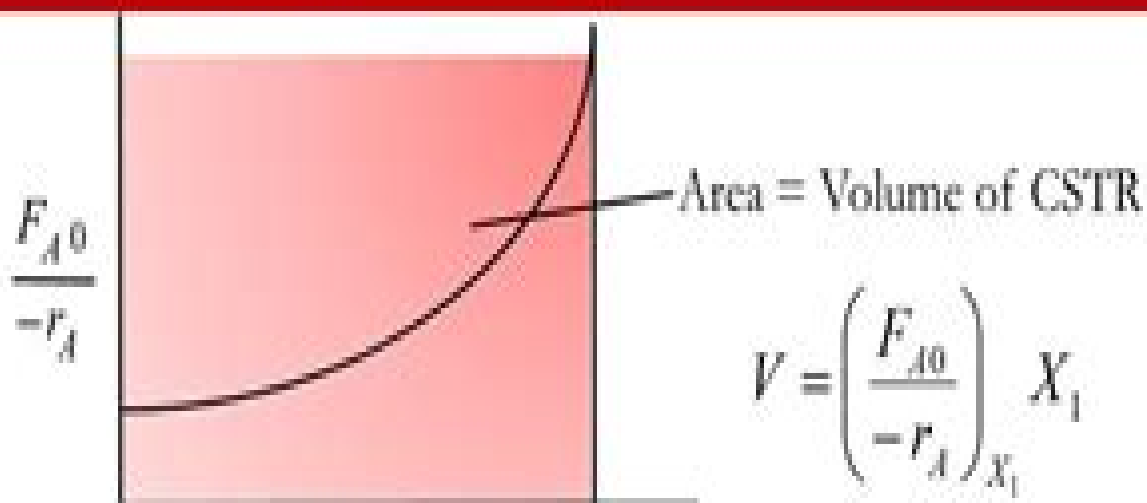
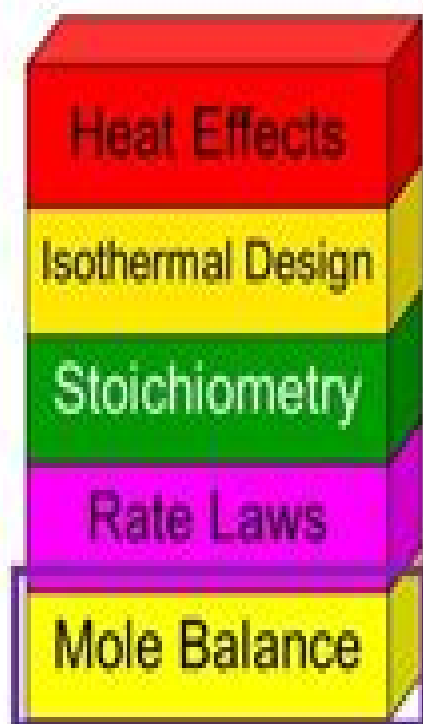


Chemical Reaction Engineering – Lecture # 5



Reactors Volume

Brendan G. Carr



Reactors Volume :

Nuclear Energy Materials And Reactors - Volume I Yassin A. Hassan, Robin A. Chaplin, 2010-09-22 Nuclear Energy Materials and Reactors is a component of Encyclopedia of Energy Sciences Engineering and Technology Resources in the global Encyclopedia of Life Support Systems EOLSS which is an integrated compendium of twenty one Encyclopedias Nuclear energy is a type of technology involving the controlled use of nuclear fission to release energy for work including propulsion heat and the generation of electricity The theme on Nuclear Energy Materials and Reactors discusses Fundamentals of Nuclear Energy Nuclear Physics Nuclear Interactions Nuclear Reactor Theory Nuclear Reactor Design Nuclear Reactor Kinetics Reactivity Changes Nuclear Power Plants Pressurized Water Reactors Boiling Water Reactors Pressurized Heavy Water Reactors Heavy Water Light Water Reactors Advanced Gas Cooled Reactors Light Water Graphite Reactors High Temperature Gas Cooled Reactors Pebble Bed Modular Reactor Radioactive Wastes Origins Classification and Management Nuclear Reactor Overview and Reactor Cycles The Nuclear Reactor Closed Cycle Safety of Boiling Water Reactors Supercritical Water Cooled Nuclear Reactors Review and Status The Gas Turbine Modular Helium Reactor Application of Risk Assessment to Nuclear Power Plants Production and Recycling Resources for Nuclear Fission These two volumes are aimed at the following five major target audiences University and College students Educators Professional practitioners Research personnel and Policy analysts managers and decision makers

Nuclear Energy Materials And Reactors - Volume II Yassin A. Hassan, Robin A. Chaplin, 2010-09-22 Nuclear Energy Materials and Reactors is a component of Encyclopedia of Energy Sciences Engineering and Technology Resources in the global Encyclopedia of Life Support Systems EOLSS which is an integrated compendium of twenty one Encyclopedias Nuclear energy is a type of technology involving the controlled use of nuclear fission to release energy for work including propulsion heat and the generation of electricity The theme on Nuclear Energy Materials and Reactors discusses Fundamentals of Nuclear Energy Nuclear Physics Nuclear Interactions Nuclear Reactor Theory Nuclear Reactor Design Nuclear Reactor Kinetics Reactivity Changes Nuclear Power Plants Pressurized Water Reactors Boiling Water Reactors Pressurized Heavy Water Reactors Heavy Water Light Water Reactors Advanced Gas Cooled Reactors Light Water Graphite Reactors High Temperature Gas Cooled Reactors Pebble Bed Modular Reactor Radioactive Wastes Origins Classification and Management Nuclear Reactor Overview and Reactor Cycles The Nuclear Reactor Closed Cycle Safety of Boiling Water Reactors Supercritical Water Cooled Nuclear Reactors Review and Status The Gas Turbine Modular Helium Reactor Application of Risk Assessment to Nuclear Power Plants Production and Recycling Resources for Nuclear Fission These two volumes are aimed at the following five major target audiences University and College students Educators Professional practitioners Research personnel and Policy analysts managers and decision makers

[Catalog of Nuclear Reactor Concepts](#) Charles E. Teeter, James A. Lecky, John H. Martens, 1964

Nuclear Science Abstracts, 1976

The Radiochemistry of Nuclear Power Plants with Light Water

Reactors Karl-Heinz Neeb,2011-06-01 No detailed description available for The Radiochemistry of Nuclear Power Plants with Light Water Reactors Energy Research Abstracts ,1985 *Fossil Energy Update* ,1982 Energy ,1982

Bibliography of Mass Spectroscopy Literature for 1971 ,1973 , *Energy: a Continuing Bibliography with Indexes* ,1982 *Energy Research Abstracts* ,1995 Semiannual with semiannual and annual indexes References to all scientific and technical literature coming from DOE its laboratories energy centers and contractors Includes all works deriving from DOE other related government sponsored information and foreign nonnuclear information Arranged under 39 categories e g Biomedical sciences basic studies Biomedical sciences applied studies Health and safety and Fusion energy Entry gives bibliographical information and abstract Corporate author subject report number indexes **Energy Abstracts for Policy Analysis** ,1977-07 **ERDA Energy Research Abstracts** United States. Energy Research and Development Administration,1977 **U.S. Government Research & Development Reports** ,1970 **Properties of Reactor Materials** ,1958 **ERDA Energy Research Abstracts** United States. Energy Research and Development Administration. Technical Information Center,1977 **Proceedings: Nuclear data and reactor theory** ,1958 Fusion Energy Update ,1979 **Chemical Reactor Design, Optimization, and Scaleup** E. B. Nauman,2002 The author provides an explanation of multiple chemical reactors in this book Also included are numerical solutions and chapters on bio chemicals and polymers Midwest

If you ally infatuation such a referred **Reactors Volume** ebook that will present you worth, get the categorically best seller from us currently from several preferred authors. If you want to hilarious books, lots of novels, tale, jokes, and more fictions collections are as well as launched, from best seller to one of the most current released.

You may not be perplexed to enjoy every book collections Reactors Volume that we will unconditionally offer. It is not just about the costs. Its more or less what you dependence currently. This Reactors Volume , as one of the most operational sellers here will enormously be among the best options to review.

https://pinsupreme.com/results/detail/Documents/Second_Inspector_Thanet.pdf

Table of Contents Reactors Volume

1. Understanding the eBook Reactors Volume
 - The Rise of Digital Reading Reactors Volume
 - Advantages of eBooks Over Traditional Books
2. Identifying Reactors Volume
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Reactors Volume
 - User-Friendly Interface
4. Exploring eBook Recommendations from Reactors Volume
 - Personalized Recommendations
 - Reactors Volume User Reviews and Ratings
 - Reactors Volume and Bestseller Lists
5. Accessing Reactors Volume Free and Paid eBooks

- Reactors Volume Public Domain eBooks
- Reactors Volume eBook Subscription Services
- Reactors Volume Budget-Friendly Options
- 6. Navigating Reactors Volume eBook Formats
 - ePub, PDF, MOBI, and More
 - Reactors Volume Compatibility with Devices
 - Reactors Volume Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Reactors Volume
 - Highlighting and Note-Taking Reactors Volume
 - Interactive Elements Reactors Volume
- 8. Staying Engaged with Reactors Volume
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Reactors Volume
- 9. Balancing eBooks and Physical Books Reactors Volume
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Reactors Volume
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Reactors Volume
 - Setting Reading Goals Reactors Volume
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Reactors Volume
 - Fact-Checking eBook Content of Reactors Volume
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

Reactors Volume Introduction

In this digital age, the convenience of accessing information at our fingertips has become a necessity. Whether its research papers, eBooks, or user manuals, PDF files have become the preferred format for sharing and reading documents. However, the cost associated with purchasing PDF files can sometimes be a barrier for many individuals and organizations. Thankfully, there are numerous websites and platforms that allow users to download free PDF files legally. In this article, we will explore some of the best platforms to download free PDFs. One of the most popular platforms to download free PDF files is Project Gutenberg. This online library offers over 60,000 free eBooks that are in the public domain. From classic literature to historical documents, Project Gutenberg provides a wide range of PDF files that can be downloaded and enjoyed on various devices. The website is user-friendly and allows users to search for specific titles or browse through different categories. Another reliable platform for downloading Reactors Volume free PDF files is Open Library. With its vast collection of over 1 million eBooks, Open Library has something for every reader. The website offers a seamless experience by providing options to borrow or download PDF files. Users simply need to create a free account to access this treasure trove of knowledge. Open Library also allows users to contribute by uploading and sharing their own PDF files, making it a collaborative platform for book enthusiasts. For those interested in academic resources, there are websites dedicated to providing free PDFs of research papers and scientific articles. One such website is Academia.edu, which allows researchers and scholars to share their work with a global audience. Users can download PDF files of research papers, theses, and dissertations covering a wide range of subjects. Academia.edu also provides a platform for discussions and networking within the academic community. When it comes to downloading Reactors Volume free PDF files of magazines, brochures, and catalogs, Issuu is a popular choice. This digital publishing platform hosts a vast collection of publications from around the world. Users can search for specific titles or explore various categories and genres. Issuu offers a seamless reading experience with its user-friendly interface and allows users to download PDF files for offline reading. Apart from dedicated platforms, search engines also play a crucial role in finding free PDF files. Google, for instance, has an advanced search feature that allows users to filter results by file type. By specifying the file type as "PDF," users can find websites that offer free PDF downloads on a specific topic. While downloading Reactors Volume free PDF files is convenient, it's important to note that copyright laws must be respected. Always ensure that the PDF files you download are legally available for free. Many authors and publishers

voluntarily provide free PDF versions of their work, but its essential to be cautious and verify the authenticity of the source before downloading Reactors Volume . In conclusion, the internet offers numerous platforms and websites that allow users to download free PDF files legally. Whether its classic literature, research papers, or magazines, there is something for everyone. The platforms mentioned in this article, such as Project Gutenberg, Open Library, Academia.edu, and Issuu, provide access to a vast collection of PDF files. However, users should always be cautious and verify the legality of the source before downloading Reactors Volume any PDF files. With these platforms, the world of PDF downloads is just a click away.

FAQs About Reactors Volume Books

How do I know which eBook platform is the best for me? Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer web-based readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience. Reactors Volume is one of the best book in our library for free trial. We provide copy of Reactors Volume in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Reactors Volume . Where to download Reactors Volume online for free? Are you looking for Reactors Volume PDF? This is definitely going to save you time and cash in something you should think about.

Find Reactors Volume :

[second inspector thanet](#)

secret brother

~~secrets of stardeep / time gate~~

second helpings from union square cafe

secret combinations today a voice of warning

secrecy in the church; a reporters case for the christians right to know

secrets from the past

secrets of new babylon left behind the kids 21

secrets of flowers a remembrancer for persons of sensibility

secrecy in religions studies in the history of religions vol 49

~~secrets of a womans heart~~

secret of the old house

second sight notes on some movies 1965-1970

~~secretarial wars~~

seconds a logical sequence

Reactors Volume :

the summer of a dormouse a year of growing old disgracefully windsor - Sep 20 2022

web mar 6 2022 the summer of a dormouse a year of growing old disgracefully windsor selection j o h n m o r t i m e r isis

unveiled a master key to the mysteries of ancient and modern science and theology vol ii theology volume 2 h

the summer of a dormouse a year of growing old disgracefully windsor - Sep 01 2023

web the summer of a dormouse a year of growing old disgracefully windsor selection downloaded from 2013

thecontemporaryaustin org by guest friedman shannon where there s a will the summer of a dormouse this beautifully

illustrated field guide enables you to easily identify the tracks and signs left by a

the summer of a dormouse a year of growing old disgracefully - Jul 31 2023

web read 28 reviews from the world s largest community for readers the time will come in your life when the voice of god will

thunder at you from a cloud f

the summer of a dormouse a year of growing old disgracefully windsor - Jun 17 2022

web the summer of a dormouse a year of growing old disgracefully windsor s the summer of a dormouse a year of growing

old disgracefully windsor s read online dotnetthread com download gathering the power of persuasion how we re bought and

sold by basic photographic materials and processes by leslie

the summer of a dormouse a year of growing old disgracefully windsor - Oct 02 2023

web jan 1 2001 the summer of a dormouse a year of growing old disgracefully windsor selection mortimer john

9780754015987 amazon com books books

the summer of a dormouse a year of growing old disgracefully windsor - Feb 11 2022

web and mortimer freely admits he often does the summer of a dormouse a year of growing old buy the summer of a dormouse thorndike general large print by mortimer john clifford isbn 9780786233441 from amazon s book store everyday low prices and free delivery on eligible orders the summer of a dormouse thorndike

the summer of a dormouse a year of growing old disgracefully windsor s - Aug 20 2022

web year of growing old disgracefully windsor selection download pdf files added by xavier johnson on october 08 2018 this is a this is a pdf of the summer of a dormouse a year of growing old disgracefully windsor selection that visitor can be got it with no cost on nearching org media joomlashine com 4 14

the summer of a dormouse a year of growing old disgracefully - May 29 2023

web jul 31 2001 the summer of a dormouse a year of growing old disgracefully mortimer john on amazon com free shipping on qualifying offers

the summer of a dormouse a year of growing old disgracefully - Mar 15 2022

web jan 1 2000 the summer of a dormouse a year of growing old disgracefully hardcover january 1 2000 by john mortimer author 4 5 out of 5 stars 16 ratings

the summer of a dormouse a year of growing old disgracefully - Apr 27 2023

web kim bunce sat 25 aug 2001 19 04 edt no one should grow old who isn t willing to appear ridiculous says john mortimer in this third part of his highly entertaining autobiography

the summer of a dormouse a year of growing old disgracefully - Jan 25 2023

web about this edition taking as his title byron s famous description of what life is a mere summer of a dormouse john mortimer describes what it s like to be 75 but feel 11 he has all the afflictions that his father had at this age but retains all his youthful enthusiasms

the summer of a dormouse a year of growing old disgracefully windsor - Nov 22 2022

web we give the summer of a dormouse a year of growing old disgracefully windsor selection and numerous books collections from fictions to scientific research in any way accompanied by them is this the summer of a dormouse a year of growing old disgracefully windsor selection that can be your partner kierkegaard s cupboard

the summer of a dormouse a year of growing old disgracefully windsor - Apr 15 2022

web may 8 2023 summer of a dormouse a year of growing old disgracefully windsor selection and numerous ebook collections from fictions to scientific research in any way in the middle of them is this the summer of a dormouse a year of growing old disgracefully windsor selection that can be your partner david elginbrod george

the summer of a dormouse a year of growing old disgracefully windsor - Jul 19 2022

web it will definitely lose the period plainly put the the summer of a dormouse a year of growing old disgracefully windsor s

is universally congruent with any devices to browse under specific circumstances you likewise accomplish not discover the newspaper the summer of a dormouse a year of growing old disgracefully windsor s that

the summer of a dormouse a year of growing old disgracefully - Mar 27 2023

web hardcover 2 nov 2000 taking as his title byron s famous description of what life is a mere summer of a dormouse john mortimer describes what it s like to be 75 but feel 11 he has all the afflictions that his father had at this

the summer of a dormouse a year of growing old disgracefully windsor - Dec 24 2022

web the summer of a dormouse a year of growing old disgracefully windsor selection the dormouse conservation handbook

the summer of a dormouse a year of growing old the summer of a dormouse by mortimer john abebooks the summer of a dormouse amazon co uk mortimer john books the summer of a dormouse bbc

the summer of a dormouse a year of growing old disgracefully windsor - May 17 2022

web the summer of a dormouse a year of growing old disgracefully windsor selection j o h n m o r t i m e r the rejuvenation of aunt mary anne warner rienzi the last of the roman tribunes edward bulwer lytton lytton xavier s book of short stories k p lee paul cadmus lincoln kirstein gay and ponies crown

the summer of a dormouse a year of growing old disgracefully windsor - Oct 22 2022

web you could purchase lead the summer of a dormouse a year of growing old disgracefully windsor selection or get it as soon as feasible you could quickly download this the summer of a dormouse a year of growing old disgracefully windsor selection after getting deal

the summer of a dormouse a year of growing old disgracefully windsor - Jun 29 2023

web adventure that embraces warm summer nights the thrill of first kisses and the bittersweet ache of saying goodbye to the past summer of the mariposas jun 15 2020 in an adventure reminiscent of homer s odyssey fifteen

the summer of a dormouse a year of growing old disgracefully - Feb 23 2023

web the summer of a dormouse a year of growing old disgracefully by mortimer john isbn 10 0670891061 isbn 13 9780670891061 penguin group usa incorporated 2000 hardcover the summer of a dormouse a year of growing old disgracefully mortimer john 9780670891061 abebooks

darth plagueis villains wiki fandom - Jul 20 2023

web darth plagueis is the overarching antagonist of the skywalker saga and one of the two overarching antagonists alongside darth bane of the star wars franchise as a whole born under the name hego damask ii in legends he is a muun dark lord of the sith heir to the lineage of darth bane and a

star wars darth plagueis review ign - Mar 16 2023

web feb 3 2012 darth plagueis is a densely packed book with many characters spanning several decades of the star wars

timeline luceno manages to juggle the numerous character voices well with a strong command

[darth plagueis star wars guide ign](#) - May 18 2023

web sep 29 2015 darth plagueis the wise is a dark lord of the sith and master of darth sidious the emperor palpatine his history and characteristics from new canon source materials are recorded below

darth plagueis superstarwars wiki fandom - Feb 15 2023

web darth plagueis also known as darth plagueis the wise was amuun dark lord of the sith heir to the lineage of darth bane and a master of midi chlorian manipulation who lived during the century leading up to the invasion of naboo obsessed with eternal life plagueis experimented with ways to cheat death and create new life from the midi

darth plagueis wookieepedia fandom - Aug 21 2023

web darth plagueis publicly known as hego damask ii and remembered as darth plagueis the wise was a male muun powerful dark lord of the sith hailing from the planet mygeeto damask was born between 147 and 120 bby to a female muun and a male muun his mother discovered his sensitivity to the

after 16 years star wars canon gives first look of darth plagueis - Jun 19 2023

web oct 18 2021 further explored in the non canon star wars universe star wars legends darth plagueis as explained in revenge of the sith mentored a young palpatine up until his death

[who is emperor palpatine s master darth plagueis collider](#) - Apr 17 2023

web sep 25 2023 darth plagueis born as hego damask was manipulated by darth tenebrous to become a sith lord who craved power and immortality plagueis took sheev palpatine as his apprentice together

darth plagueis wookieepedia fandom - Oct 23 2023

web darth plagueis pronounced pleig əs was a force sensitive male muun dark lord of the sith and the sith master of darth sidious plagueis lusted for immortality believing the secret laid in science to that end he worked with his sith apprentice conducting research into bioengineering and

darth plagueis simple english wikipedia the free encyclopedia - Jan 14 2023

web darth plagueis is a sith in the star wars universe he was the teacher of palpatine he was first mentioned in star wars episode iii revenge of the sith by palpatine to anakin skywalker and became a character in various novels biography darth plagueis the wise was a feared sith lord who wanted to bring people back to life including his own

[darth plagueis wikipedia](#) - Sep 22 2023

web a sith lord with the ability to cheat death and create life plagueis is the mentor of sheev palpatine darth sidious who in accordance to the sith s rule of two eventually betrays plagueis by murdering him in his sleep taking his place as sith master

qrb 501 final exam 2023 answerdev com - Mar 27 2022

web free qrb 501 final exam 2021 posted on 23 jan 2023 how does compound interest affect the future value of an investment stays the same b decreases c increases d

qrb 501 final exam questions and answers 2019 docmerit - Jan 25 2022

web dec 5 2022 qrb 501 final exam questions and answers 2019 test prep qrb 501 spring 2018 1 solve the problem round amounts to the nearest cent and percents to the

qrb 501 final exam answers book cyberlab sutd edu sg - Sep 01 2022

web qrb 501 final exam answers ccsp complete study guide jan 09 2023 the most comprehensive and current ccsp self study solution on the market here s the

qrb 501 final exam 1 question and answers study guide - Jul 31 2022

web 1 find the range for the scores 13 23 60 46 53 75 2 solve the problem round amounts to the nearest cent and percents to the nearest tenth of a percent cost 5 22

qrb 501 final exam 4 question and answers docmerit - May 09 2023

web dec 8 2022 qrb 501 final exam 4 question and answers 1 solve the problem round amounts to the nearest cent and percents to the nearest tenth of a

qrb 501 final exam questions plus answers - Oct 02 2022

web feb 28 2014 click here to download the answers 24 only 1 write the following as an algebraic expression using x as the variable triple a number subtracted from the number

qrb 501 final exam questions and answers docmerit - Feb 23 2022

web dec 7 2022 qrb 501 final exam questions and answers solve the problem round amounts to the nearest cent and percents to the nearest tenth of a percent markup

qrb 501 final exams justanswer - Nov 03 2022

web answers to homework math homework qrb 501 final exams manal elkhoshkhany 422 satisfied customers tutor at manal elkhoshkhany manal elkhoshkhany is online now

qrb 501 qrb 501 final exam 30 questions with answers - Jan 05 2023

web qrb 501 qrb 501 final exam 30 questions with answers 100 correct click here to get this tutorial 1 write the following as an algebraic expression using x as the

qrb 501 final exam questions and answers docmerit - Apr 08 2023

web qrb 501 final exam questions and answers 13 95 add to cart browse study resource subjects accounting anthropology architecture art astronomy biology business

186860117 qrb 501 final exam 1 correct course hero - Jul 11 2023

web view test prep 186860117 qrb 501 final exam 1 correct from qrb 501 at university of phoenix 1 write the following as an algebraic expression using x as the

qrb 501 final exam by examsguide issuu - Feb 06 2023

web download answers qrb 501 final exam 1 find the range for the set of data 23 29 17 21 21 the range is 2

qrb 501 d university of phoenix course hero - Oct 14 2023

web qrb 501 final exam 1 2018 doc qrb 501 final exam 1 find the range for the scores 13 23 60 46 53 75 a 62 2 which month in 2009 had the highest sales a 5 3 find

mastering qrb 501 conquer the final exam in 2023 - May 29 2022

web qrb 501 final exam 2023 qrb 501 final exam 2023 is an important assessment that measures the students understanding of quantitative reasoning and business concepts

qrb 501 final exam by great tutor issuu - Mar 07 2023

web finalexamguide com qrb 501 final exam 5 255 htm

qrb 501 final exam blogger - Dec 04 2022

web qrb 501 week 5 individual assignment quantitative techniques in financial valuation problem set qrb 501 week 5 team assignment financial valuation time value of

qrb 501 final exam answers 480 words studymode - Jun 29 2022

web qrb 501 final exam answers view writing issues file edit tools settings filter results name student id

qrb 501 final exam with verified answers 2022 docmerit - Dec 24 2021

web sep 8 2022 qrb 501 final exam with verified answers 2022 14 95 add to cart browse study resource subjects accounting anthropology architecture art astronomy biology

qrb 501 final exam new docx answer course hero - Aug 12 2023

web view qrb 501 final exam new docx from qrb 501 at university of phoenix answer 12 answer 37 5 answer 300 60 69 i 1 70 79 iii 3 80 89 iiiii 5 90 99 iiiii ii 7 x 48

free essays on qrb 501 final exam answers - Apr 27 2022

web essays on qrb 501 final exam answers there are tons of free term papers and essays on qrb 501 final exam answers on cyberessays com we also have a wide variety of

qrb 501 final exam polynomials chapter 5 1 a polynomial - Jun 10 2023

web view test prep qrb 501 final exam from qrb 501 at university of phoenix polynomials chapter 5 1 a polynomial is a sum of one or more terms where each term c expert help

qrb 501 final exam study guide pdf interest depreciation - Sep 13 2023

web this final exam study guide includes questions answers and explanations for 79 example qrb 501 final exam problems 1
solve for the unknown in the equation 11a 77 2