MAC 1140: Precalculus Algebra SYLLABUS

FLEXIBLE LEARNING (updated 10/16/15)

The course home page is located in Canvas. Log in at https://lss.at.ufl.edu.

You can send a message to your instructor listed below by going to your inbox in Canvas and selecting "Compose a new message". This is the preferred method of communication, but if that is not feasible then you can email your instructor using the email address shown below.

Coordinator/Instructor

Keith Grizzell
Email: grizzell@ufl.edu (but please email me through Canvas if possible)
Web: http://people.clas.ufl.edu/grizzell/

Video Presenters

Lectures: Sherry Tornwall
Checkpoint Solutions: Keith Grizzell

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1. Introduction

1a. Course Content

College algebra, functions, coordinate geometry, exponential functions, and logarithmic functions. This course is designed as a review of algebra to prepare the student for business calculus. If you plan to take engineering calculus, then after completing this course you will need to take MAC 1114, Trigonometry. Or instead of taking MAC 1140 and then MAC 1114, you could take MAC 1147, Precalculus Algebra/Trig, which is a very fast paced course.

A minimum grade of C (not C−) in MAC 1140 satisfies three hours of the general education requirement and also satisfies the pure math portion of the state Writing/Math requirement. Note: A student can receive at most four credits for taking both MAC 1147, and MAC 1140 or MAC 1114, and at most five credit hours for taking MAC 1147, MAC 1140, and MAC 1114. Students who successfully complete this course (C or better) can advance directly to MAC 2233, Survey of Calculus 1 (for business majors).

Students taking this course for general education credit or the pure math portion of the Writing/Math requirement, and who do not need precalculus for their major or as preparation for calculus, might consider taking MGF 1106 or MAC 1105. For more information on math courses and math advisors go to http://www.math.ufl.edu/.

1b. Prerequisites

This course assumes prior knowledge of intermediate algebra (Algebra 2). Students should be able to do arithmetic without a calculator.

MAC 1140 begins with a short review of high school algebra topics (appendices A1 – A7). **You should already be competent in working this material.**

1c. Required Materials

- The textbook: **PRECALCULUS**, 9th edition, by Larson.
    - You may use either the e-book or a hard copy.
    - The solutions manual is NOT required.
- A WebAssign access code.
    - You will have homework assignments, quizzes, check-ups, and exams in WebAssign.
    - You should always use https://www.webassign.net/ufl/login.html to login to WebAssign (and then your Gatorlink login info as directed).
    - Note that there will be a short delay after you complete the Welcome Quiz in Canvas before you will be able to access the course in WebAssign. You will be given directions for accessing WebAssign shortly after you complete the Welcome Quiz.

There are several purchase options:

- ♦ Purchase the textbook and WebAssign access codes together directly from the publisher at http://www.cengagebrain.com/course/1-1ZO9XE5.
    - o $95 for the custom UF paperback book, access to the e-book, and a WebAssign access code; or
    - o $50 for access to the e-book and a WebAssign access code.
- ♦ Purchase the textbook at a bookstore or elsewhere.
    - o Either the UF custom 9th edition or the complete 9th edition may be used. If you purchase a new textbook, a WebAssign access code might (or might not) come with it, so please be aware.
    - o Prices may vary.
- ♦ Purchase a WebAssign access code directly from WebAssign.

1d. Canvas

Canvas is located at https://lss.at.ufl.edu/; use your Gatorlink username and password to login. You can find your lecture videos, checkpoint quizzes, grades, announcements, lecture outlines, free help information, etc., at this site. You are responsible for verifying that your grades are accurate. You have one week after a score has been posted in Canvas to contact your instructor if you believe there has been a grading or a recording error.

1e. Lectures

Viewing lecture presentations is an important aspect of the learning process. The lecture videos provide the main presentation of the course material. Each module consists of several lecture videos for a total of approximately 1 hour. Lecture outlines can be printed from Canvas and used as outlines for taking notes on each video. It is suggested that you read the book, watch the lecture videos, do the checkpoint problems as they come up in the lecture videos, do the corresponding homework assignment for the module, in that order. After some modules there may also be a quiz to take, or even a checkup and exam to take.

1f. Calculator Policy

A basic non-scientific calculator may be used on homework, quizzes, checkups, and exams. A basic non-scientific calculator has the ability to add, subtract, multiply, and divide, as well as the ability to take square roots (and perhaps buttons for percentages and storing values in memory). It is not the same as a scientific or graphing calculator. You will not be allowed to use a scientific calculator on exams, and any violations of this policy will be considered cheating.

You are encouraged to do most of the arithmetic by hand so that you don't lose your basic arithmetic skills. There is always the chance that somewhere in the future you will not be allowed to use a calculator.

1g. Help

Your instructor is available by email or arranged conference to answer your questions about the course material. **You should check Canvas regularly and consult with your instructor if you have any questions about recorded grades. All grade concerns must be taken care of within one week of receiving the score in Canvas.** Your grade is subject to being raised or lowered if there is a recording error, computational error, bubbling error, "padding" error, etc.

1h. Success

Success in MAC 1140 depends largely on your attitude and effort. Keeping up with the videos and assignments is critical. Most students find it beneficial to work daily on the material as opposed to saving it all for one day. Note also that it is not effective to sit and copy notes without following the thought processes involved in the lecture. For example, you should try to answer any questions posed by the lecturer before the lecturer presents a solution to you; students who actively participate have greater success.

You need to spend time reviewing the concepts of each lecture **before** you attempt homework problems. It is also important to spend some time looking over the textbook sections to be covered in the next lecture to become familiar with the vocabulary and main ideas beforehand so that you will be better able to grasp the material presented in the videos. **You should expect to spend <u>at least </u>10 hours per week working on this course.**

1i. Students with Disabilities

The [Disability Resource Center](#) in the [Dean of Students Office](#) provides students and faculty with information and support regarding accommodations for students with disabilities. Staff at the Disability Resource Center will assist any student who registers as having a disability. Official documentation of a disability is required to determine eligibility for appropriate accommodations. The professional employees at the Disability Resource Program serve as full-time advocates for students with disabilities ensuring students have physical and programmatic access to all college programs. One of the services provided by the Disability Resource Center:

[Testing Accommodations](#)(Click on this link for further information.)

Here is the link to register with the DRC: [DRC-How to Get Started](#)

The Flexible Learning Office needs to be notified of any special accommodations required by the student when they begin their course.

1j. Academic Honesty

The University of Florida expects students to be honest in all of their work. Please remember to commit yourself to academic honesty with the following pledge:

> **"We, the members of the University of Florida Community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."**

Regarding plagiarism:

"A student shall not represent as the student's own work all or any portion of the work of another. Plagiarism includes but is not limited to:

1. Quoting oral or written materials including but not limited to those found on the internet, whether published or unpublished, without proper attribution.
2. Submitting a document or assignment which in whole or in part is identical or substantially identical to a document or assignment not authored by the student."

(Source: Regulations of the University of Florida, UF-4.041)

You are strongly encouraged to read through the regulations so that you have a clear understanding of what would be considered a violation.

"For a violation or violations of the Honor Code, a student may receive any of the sanctions that can be imposed for Student Conduct Code violations, including but not limited to conduct probation, suspension and expulsion as well as any educational sanctions. In addition, students may receive the following:

a) Assignment grade penalty. The student is assigned a grade penalty on an assignment including but not limited to a zero.
b) Course grade penalty. The student is assigned a grade penalty in the entire course including but not limited to an 'E'."

(Source: Regulations of the University of Florida, UF-4.047)

2. Flexible Learning Policies

UF Flexible Learning Contact Information:

Email: learn@dce.ufl.edu

Phone: (352) 392-1711

Toll free: (800) 327-4218

Fax: (352) 392-6950

Website: UF Flexible Learning

Office Hours: Monday–Friday, except holidays, 8:00am–5:00pm EST

2a. Course Deadline and Extension Policy

Students are allowed 16 weeks, from their date of enrollment, to complete and submit their coursework. If the student has not submitted at least 50% of their coursework and have an extenuating circumstance preventing them from submitting the coursework, a failing grade of "E", "E0" or "E1" will be issued and recorded to the UF Registrar.

If the student has made sufficient academic progress, which is defined as completing and submitting at least 50% of the coursework and have an extenuating circumstance, the student may petition the instructor for a course extension before the course expires. Each course extension request will be administratively evaluated. Instructors are not required to allow extensions. If a student does receive an extension, an incomplete grade of an "I" will be assigned as an interim grade. When the course is completed, the instructor will initiate the change of grade. After that, the "I" grade will be changed to the student's final course grade on their transcript.

2b. Course Cancels and Course Drops

A Course Cancel:

A tuition refund may be granted after a student submits a written request within 30 days of enrollment to the Flexible Learning Office. This request must be in writing by learn@dce.ufl.edu or sent by fax, 352-392-6950. Refunds will be the amount of tuition, less $25.00 per course. If a credit card was used, the refund will be credited a back to the card. No refunds are granted after 30 days.

Dropping a course: To drop a course, you need to email the Flexible Learning office at learn@dce.ufl.edu with a request to drop within 14 weeks of the date of enrollment. In addition to their own request by email, UF students must have advisor approval to drop a flexible learning course. An advisor can email learn@dce.ufl.edu with the student's name, the course that they want to drop, and confirmation of permission to do so. It is the student's responsibility to verify that all drop requests have been received by the Flexible Learning office within the allotted time. The course grade will appear as "W" on a UF transcript.

Students with disabilities who need to drop a course due to disability-related reasons are permitted to petition for additional drops. Find more information by contacting the Disability Resource Center.

2c. Medical and Retroactive Withdrawals

For Medical Withdrawals: Dean of Students Office Medical Withdrawal Process

For Retroactive Withdrawals: Petition Information

The student needs to notify the Flexible Learning Office of their approved medical or retroactive withdrawal by emailing a copy of the approval to learn@dce.ufl.edu.

2d. How to Request a UF Transcript

There are two ways to order a transcript:

1. The online ordering system by going to this link: Ordering UF Transcripts

2. If you cannot use the online system, please contact the UF Office of the University Registrar for instructions to mail in a request with a check or money order. They can be contacted by phone Monday–Friday, 8:00 a.m. to 5:00 p.m., at 352-392-1374. Persons with hearing impairments can call FRS # 1-800-955-8771 (TDD).

Please check your "unofficial transcript" first, before ordering your "official transcript", to make certain that your grade has been posted.

3. Proctored Testing

You must register with ProctorU for each exam at least 3 days prior to the exam date. Students are responsible for material covered in the lecture notes, including any practice problems at the end of some lectures, suggested textbook homework problems, and all assigned WebAssign material.

For each exam you should have only the following items: pencils or pens, your Gator1 picture ID card or a government-issued picture ID, a basic non-scientific

calculator, and up to 10 sheets of completely blank, white, scratch paper (no holes, lines, printing, etc.). NO scientific or graphing calculators are allowed. NO CELL PHONES, NO NOTES, NO CALCULATOR MANUALS, NO BOOKS, NO OUTSIDE HELP!

4. Grading

The University of Florida assures the confidentiality of all your educational records in accordance with State University System Rules, State Statutes, and the Family Educational Rights and Privacy Act. **Grades are not given out over the phone.**

4a. Course Grade

The course grade is comprised as follows:

Welcome Quiz (in Canvas)	1%
Lecture Checkpoints (in Canvas)	7%
WebAssign Homeworks	7%
WebAssign Quizzes (drop lowest 3)	7%
Checkups (in WebAssign; 3% each)	9%
Midterm Exams (in WebAssign; 16% each)	48%
Cumulative Final Exam (in WebAssign)	22%

The course grade is then determined by your final percentage as follows, **with cutoffs strictly enforced**:

Grade	Percentage
A	90.0% and above
A−	87.0% to 89.9%
B+	84.0% to 86.9%
B	80.0% to 83.9%
B−	77.0% to 79.9%
C+	74.0% to 76.9%
C	70.0% to 73.9%
C−	67.0% to 69.9%
D+	64.0% to 66.9%
D	60.0% to 63.9%
D−	57.0% to 59.9%
E	56.9% and below

4b. Welcome Quiz

The Welcome Quiz is to make sure you understand what is expected of you in this course. You will find this assignment in Canvas. It is the first assignment that must be completed before any other assignment may be attempted.

4c. Lecture Checkpoints

In each video is a Checkpoint problem that pertains to the concept recently covered. You should work the Checkpoint problem and write your answer down (a, b, c, d, or e), since you will need to enter your multiple-choice answers in that module's Checkpoint Quiz in Canvas. When you complete the Checkpoint Quiz, you will be presented with a link to video solutions for the checkpoint problems as well as a password that you will use to access that module's homework assignment in WebAssign.

4d. Textbook Homework

The textbook homework assignments listed at the end of this syllabus represent the minimum number of problems you should do in each section. Some homework problems suggest the use of a graphing calculator; they are designed to help you visualize important concepts and to reinforce the mathematical processes involved. The use of a graphing calculator when doing homework is not required, though a scientific calculator may be required to finish working certain problems. The textbook homework will not be graded, but you are encouraged to ask questions about it as necessary.

4e. WebAssign Homeworks and Quizzes

You have "unlimited" time for each WebAssign Homework, and you have 10 attempts for each question. To unlock the homework, you must first take the corresponding Checkpoint Quiz in Canvas to get the password, as well as score at least 70% on all previous homework assignments and take any previous quizzes.

You have one hour for each WebAssign Quiz, which will consist of four problems similar to the homework problems. You will have up to 3 attempts for each question. Note that you must first complete the homework assignments covering the material that a quiz covers with scores of at least 70% before the corresponding quiz will be available to you.

The WebAssign Homeworks and Quizzes are open-book and open-note. You may have a tutor help you with the Homeworks, but NOT with the Quizzes. You will need to be able to work problems on your own without any assistance in order to succeed in this course.

4f. Checkups

The Checkups (in WebAssign) are designed to give you feedback on your understanding of the course material prior to the corresponding exam. They will be like a longer WebAssign Quiz, but without a time limit. They will automatically be unlocked once you have completed all of the other assignments covering the material on the exam.

4g. Exams

After each checkup the corresponding midterm exam becomes available for you to take. ProctorU will unlock the exam for you during your proctoring session. The questions on the exam are similar to the homework, quiz, and checkup questions, but you will only have up to 2 attempts per question.

The three midterm exams each consist of 15 questions and have a 90-minute time limit. The final exam consists of 18 questions and has a 2-hour time limit. There is no partial credit unless a question has multiple parts that can be graded separately, in which case each part will be worth a fraction of the question's point-value.

4h. Make-up Policy

YOU MUST FINISH ALL OTHER WORK IN THE COURSE BEFORE YOU TAKE THE FINAL EXAM. ANY WORK ATTEMPTED OR COMPLETED AFTER THE FINAL EXAM WILL NOT COUNT!

- ♦ Make-up Checkups and Exams: There are no make-ups for the checkups. But, you can have an opportunity to take one make-up exam to replace one (missing or low) midterm exam score *for any reason*. (The old score only gets replaced if the new score is higher.) To avail yourself of this opportunity, you must, after taking the third midterm exam, let your instructor know which midterm exam you would like to make-up and, of course, you must register for a make-up exam slot on ProctorU. **You must give at least 3 days notice to both your instructor and ProctorU before you intend to take the make-up exam, no exceptions!** (So, if your course ends in less than 3 days, you cannot request to take a make-up exam.) Also, you must complete the make-up exam BEFORE you take the final exam.

- ♦ Quizzes and Homeworks: There are no make-ups, since some of your lowest quiz scores are dropped and it is possible to get assistance with homework before you use up your ten attempts.

5. Sample Schedule

Week	Modules	Quizzes
1	1, 2	1
2	3, 4	2
3	5, 6	3
4	7, 8	4
5	Checkup 1 and Exam 1	
6	9, 10	5
7	11, 12	6
8	13, 14	7
9	15, 16	8, 9
10	Checkup 2 and Exam 2	
11	17, 18	10
12	19, 20	11
13	21, 22	12
14	23, 24	13, 14
15	Checkup 3 and Exam 3	
16	Make-up and Final Exam	

6. Textbook Homework Assignments

You should read the textbook sections covered in each lecture before viewing the video. After each lecture, review your notes and the text to make sure you understand the main ideas prior to working the exercises.

If you have questions about the reading or homework exercises, you may ask your instructor (or a qualified tutor, etc.).

You should complete each assignment before the next lecture, since the material in each lecture often builds on previous concepts.

L1 Real Numbers

Reading: Student Guide, Appendix A.1

Exercises (A.1), page A11: 6, 7, 9, 12, 16, 17, 19, 25, 27, 35, 39, 40, 43, 50, 53, 55, 61, 65, 72, 73, 80

L2 Exponents and Radicals

Reading: Appendix A.2

Exercises (A.2), page A23: 1, 4, 6, 7, 8, 13, 14, 19, 20, 26, 29, 41, 44, 50, 52, 56, 58, 60, 62, 64, 65, 72, 74, 75, 78, 81, 84

Additional exercise: Simplify the radical expression $\sqrt[4]{81x^{11}} \cdot \sqrt{36x^{11}}$.

L3 Polynomials and Factoring

Reading: Appendix A.3

Exercises (A.3), page A33: 1, 2, 15, 19, 21, 23, 33, 35, 37, 39, 43, 45, 47, 52, 56, 61, 69, 76, 79, 89, 94, 103, 104, 107

L4 Rational Expressions

Reading: Appendix A.4

Exercises (A.4), page A42: 1, 2, 3, 4, 7, 12, 16, 22, 30, 35, 39, 44, 51, 54, 56, 60, 62, 66, 70, 78, 79, 81, 82

L5 Solving Equations

Reading: Appendix A.5

Exercises (A.5), page A56: 1, 3, 4, 10, 14, 19, 21, 26, 34, 38, 40, 42, 44, 50, 63, 70, 76, 78, 80, 84, 85, 86, 90, 92, 95, 100

Additional exercises: Find all real solutions and check your answers.

1. $6x^{!!} + x^{!!} = 2$

2. $8(m-4)^{!} - 10(m-4)^{!} + 3 = 0$

3. $(y+3)^{!/!} - 2(y+3)^{!/!} - 3 = 0$

4. $4(x+1)^{!/!} - 5(x+1)^{!/!} + (x+1)^{!/!} = 0$

5. $\dfrac{1}{x-3} + \dfrac{3}{x+3} = \dfrac{6x}{x^{!}-9}$

6. $\dfrac{x^{!}-9}{x^{!}-2x-3} = \dfrac{3}{2}$

7. $x^{!} - 4x^{!} - 5 = 0$

8. $3x^{!} + 10x^{!} - 25 = 0$

9. $\sqrt{x+7} + 3 = \sqrt{x-4}$

10. $2x = 1 - \sqrt{2-x}$

11. $x = \sqrt{15-2x}$

12. $(5x^{!}-6)^{!/!} = x$

13. $\sqrt[!]{4x+3} = \sqrt[!]{2x-1}$

14. $(2x-1)^{!/!} = x^{!/!}$

15. $\sqrt{x} - 3\sqrt[!]{x} - 4 = 0$

16. $x^{!/!} + 3x^{!!/!} = 10x^{!!/!}$

17. $x^{!} - 2x^{!} + x^{!} = 0$

L6 Linear Inequalities and Algebraic Errors

Reading: Appendices A.6 and A.7

Exercises (A.6), page A64: 4, 7, 9, 15, 28, 38, 40, 53, 54, 58, 69, 76, 78, 81, 82, 83, 85, 87, 89, 91, 94, 95, 98, 102, 103, 109

Exercises (A.7), page A72: 15, 16, 22, 26, 31, 33, 43, 49, 55, 64, 67, 72

L7 Rectangular Coordinates and Graphs

Reading: Sections 1.1 and 1.2

Exercises (1.1), page 8: 1, 2, 3, 4, 14, 24, 32, 45, 51, 54, 56, 58

Note: The correct answer for 58(a) is $(x_1, -y_1)$.

Exercises (1.2), page 19: 3, 4, 5, 10, 26, 28, 29, 31, 34, 38, 43, 47, 48, 71, 74, 76, 79, 90

Additional exercises:

1. Find the equation of a circle in standard form with center at the point $(-3, 2)$ and tangent to the line (touching the line) $y = 4$.

2. Given the circle $x^2 + (y + 1)^2 - 1 = 8$, find its center, radius, and intercepts. (Hint: Sketch the graph.)

L8 Linear Equations and Functions

Reading: Sections 1.3 and 1.4

Exercises (1.3), page 31: 1, 2, 3, 4, 5, 6, 9, 11, 14, 19, 23, 30, 39, 45, 51, 53, 55, 65, 67, 70, 74, 87, 89, 90, 91, 93, 94, 96, 99, 101, 102, 103, 104, 105, 112

Exercises (1.4), page 44: 1, 2, 4, 7, 11, 12, 24, 29, 32, 36, 40, 47, 48, 57, 58, 59, 61, 63, 64, 68, 71, 73, 78, 82, 85, 86, 88, 89, 90, 93

L9 Analyzing Graphs of Functions

Reading: Section 1.5

Exercises (1.5), page 56: 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 18, 20, 23, 33, 37, 55, 56, 62, 66, 71, 72, 73, 83, 85, 88a, 93, 94, 95, 96, 98

L10 A Library of Functions and Transformations of Functions

Reading: Sections 1.6 and 1.7

Exercises (1.6), page 65: 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 35, 36, 39, 43, 47, 48, 49, 50

Exercises (1.7), page 72: 1, 2, 3, 4, 5, 9, 11, 13, 14, 15, 16, 17, 19, 20, 21, 23, 25, 27, 29, 31, 33, 39, 47, 50, 51, 53, 55, 57, 71, 73, 74, 75, 76, 78, 80

L11 Combinations of Functions

Reading: Section 1.8

Exercises (1.8), page 81: 3, 9, 13, 17, 18, 23, 25, 31, 34, 35, 37, 42, 43, 45, 51, 55, 59, 60, 61

L12 Inverse Functions

Reading: Section 1.9

Exercises (1.9), page 90: 1, 2, 3, 4, 5, 6, 14, 19, 21, 27, 29, 33, 35, 37, 39, 45, 49, 50, 57, 61, 63, 64, 65, 70, 72, 73, 76, 79, 84, 86, 88, 92, 93, 95, 96, 97, 101

L13 Quadratic Functions

Reading: Section 2.1

Exercises (2.1), page 120: 3, 5, 6, 7, 9, 11, 15, 22, 32, 43, 44, 48, 50, 58, 68, 74, 75, 76, 77, 80, 83, 87, 88, 89, 90, 92

L14 Polynomial Functions of Higher Degree and Division of Polynomials

Reading: Sections 2.2 and 2.3

Exercises (2.2), page 133: 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 15, 17, 19, 21, 23, 27, 29, 61, 63, 65, 69, 71, 76, 78, 80, 82, 85, 87, 97a, b, 100a, b, 105, 107, 108, 109, 110, 111, 112, 113, 115

Exercises (2.3), page 144: 2, 3, 4, 5, 6, 8, 12, 24, 34, 38, 48, 55, 60, 67, 68, 84, 87, 90, 92, 95, 97

L15 Complex Numbers

Reading: Section 2.4

Exercises (2.4), page 152: 1, 2, 3, 4, 5, 6, 7, 9, 13, 17, 19, 25, 27, 36, 38, 42, 45, 47, 49, 51, 56, 60, 64, 65, 67, 69, 72, 81, 85, 87, 93, 94, 96, 97, 99

L16 Zeros of Polynomial Functions

Reading: Sections 2.5 and 2.6

Exercises (2.5), page 164: 2, 3, 4, 5, 6, 9, 11, 13, 15, 17, 20, 26, 30, 33, 46, 48, 50, 52, 56, 62, 63, 78, 99, 104, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 128, 130, 131

Exercises (2.6), page 177: 2, 3, 7

L17 Rational Functions

Reading: Section 2.6

Exercises (2.6), page 177: 10, 13, 15, 21, 28, 29, 31, 34, 35, 38, 41, 42, 43, 44, 67, 73 a, b, 78, 80, 81, 82

L18 Nonlinear Inequalities

Reading: Section 2.7

Exercises (2.7), page 187: 1, 2, 3, 4, 7, 13, 15, 24, 28, 30, 35, 36, 37, 38, 46, 52, 53, 66, 74, 76, 78, 90

L19 Linear and Nonlinear Systems of Equations

Reading: Sections 7.1 and 7.2

Exercises (7.1), page 473: 3, 4, 8, 10, 12, 14, 16, 20, 23, 26, 30, 32, 38, 42, 56, 59, 66, 70, 71, 72

Exercises (7.2), page 484: 12, 16, 21, 22, 30, 31, 32, 33, 34, 42, 44, 49 a, c, 52, 62

L20 Exponential Functions

Reading: Section 3.1

Exercises (3.1): page 208: 5, 6, 13, 14, 15, 16, 17–22 all without a calculator, 23–26 all, 39–44 all without a calculator, 52, 54, 57 use calculator, 63 use calc., 65 use calc., 72, 73, 74, 76, 78, 79, 84, 85

L21 Logarithmic Functions

Reading: Section 3.2

Exercises (3.2), page 218: 1–7 all, 9, 11, 13, 15, 17, 19, 25–28 all, 30, 32, 33, 37–40 all, 43, 45, 46, 48, 49, 52, 53, 56, 61, 63, 66, 68, 74, 76, 82, 83, 84, 88

L22 Properties of Logarithms

Reading: Section 3.3

Exercises (3.3), page 225: 4, 5, 6, 7, 15, 16, 18, 19, 21–37 all, 39, 41, 42, 43, 45, 49, 52, 54, 56, 57, 59, 60, 62, 64, 68, 73, 74, 75, 76, 78, 80, 84

L23 Exponential and Logarithmic Equations

Reading: Section 3.4

Exercises (3.4), page 235: 1, 3, 5, 7–17 all, 20, 22, 24, 26, 32, 36–62 even, 72–82 even, 87–90 all

L24 Exponential and Logarithmic Models

Reading: Section 3.5

Exercises (3.5), page 245: 1, 5, 8, 10, 14, 16, 21, 24, 26, 33, 34, 36, 44, 57