

Math 148-002 HW Assignments - Spring 2009

Assignment 1

- (C)Section 1.1, Page 4: #41, 44, 48, 49, 53, 55 – 60.
 Additional Exercises: Express each recurring decimal as a ratio of integers:
 A = 4.444...
 B = 0.12121212...
 C = 6.123123123...
 D = 45.0283283283....

-Due date: Monday, January 26, 2009 _____

Assignment 2

- (C)Section 1.2, Page 9: #4, 13, 16, 27, 30, 32, 35, 37, 40, 44, 52, 53, 58, 65, 66, 67.
 (C)Section 1.3, Page 17: #6, 10, 17, 22(c), 27, 30, 36, 38, 45, 48, 70, 73, 75.
 (C)Appendix B, Page A30: #2, 3, 7, 10, 23, 36, 57, 61, 66, 70.
 Additional Exercises:
 1. A triple (a, b, c) of positive integers is called a Pythagorean triple if $a^2 + b^2 = c^2$.
 -For example, $(3, 4, 5)$ and $(5, 12, 13)$ are both Pythagorean triples.
 Show that $(2m, m^2 - 1, m^2 + 1)$ is a Pythagorean triple provided m is an integer, $m > 1$.
 2. If $a > 0$ and $(a + a^{-1}) = 5$ then find $a^3 + a^{-3}$.
 3. A number of the form:

$$a_0 + \frac{1}{a_1 + \frac{1}{a_2 + \frac{1}{a_3 + \dots}}}$$

where a_k is an integer with $a_k \geq 0$ if $k \geq 1$ is called a continued fraction. The dots indicate a pattern that may either continue indefinitely or terminate. It is well known that every rational number can be represented as a terminating continued fraction.

For example: $\frac{7}{4} = 1 + \frac{3}{4} = 1 + \frac{1}{\frac{4}{3}} = 1 + \frac{1}{1 + \frac{1}{3}}$ and $\frac{23}{6} = 3 + \frac{5}{6} = 3 + \frac{1}{\frac{6}{5}} = 3 + \frac{1}{1 + \frac{1}{5}}$.

Find the continued fraction expansions of each of the following numbers:

(a) $\frac{13}{5}$ (b) $\frac{29}{11}$ (c) $\frac{-5}{4}$.

4. Evaluate the nonterminating continued fraction:

$$\Phi = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \dots}}}$$

Hint: Φ satisfies a simple quadratic equation.

-Due date: Monday, February 2, 2009 _____

Assignment 3

- (C)Section 12.2, Page 904: #5, 11, 16, 18, 22, 24, 35, 41, 57.
 (C)Section 12.3, Page 912: #4, 9, 15, 21, 29, 34, 61 Hint: Start by using long division to find the number, a , such that $x^2 - 2ax + a^2$ divides $x^3 - 12x + 16$ exactly.
 (C)Section 12.5, Page 931 #3(a)(b), 5, 13, 18, 28(b).
 (C)Section 12.6, Page 939: #21(a)(b), 22(a), 23(a).
 -Due date: Monday, February 9, 2009 _____

Assignment 4

- (C)Section 2.3, Page 110: #10, 13, 20, 38.
 (C)Section 2.4, Page 119 #9, 12, 14, 29, 37, 52, 54, 59.
 (C)Section 1.4, Page 26: #3, 4, 8(a), 9(a), 11(a), 12(a), 13(b), 18, 19, 26*, 27, 33.
 (C) Chpt 2 Review, Page 126: #62, 63.
 -Due date: Monday, February 16, 2009 _____

*In problem 1.4, #26, the ΔXYZ formed by joining the midpoints of the sides of ΔABC is called the medial triangle of ΔABC .

It can be shown that the sides of $\triangle XYZ$ are parallel to those of $\triangle ABC$. Use this fact and similar triangles to answer part 26(d).

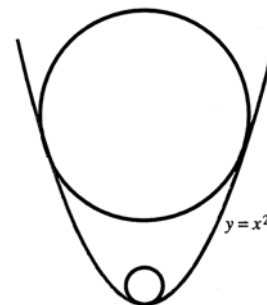
Assignment 5

(C)Section 1.6, Page 52: #1(a)(b), 4, 12, 13, 18, 19, 26(c)(d)(e), 29(b), 33, 35, 46, 48, 54, 56.

(C)Section 1.7, Page 67: #1, 15, 23, 24, 41, 46, 47, 53, 54, 57.

(C) Chpt 2 Review, Page 127: #73.

Additional Exercise: A circle of radius r is dropped into the parabola $y = x^2$. If r is too large, the circle will not fall all the way to the bottom. If r is sufficiently small, the circle will touch the parabola at its vertex $(0, 0)$. Find the largest value of r so that the circle will touch the vertex of the parabola.



-Due date: Monday, February 23, 2009_____

Midterm Exam 1 – Wednesday, February 25th

Assignment 6

(S)Section 1.1, Page 20: #5, 6, 7, 11, 27, 28, 30, 39, 40, 41, 49, 50, 53, 61, 64, 65, 66, 68, 70.

(S)Section 1.3, Page 43: #1, 6, 7, 31, 34, 43, 57, 58, 64.

-Due date: Monday, March 2, 2009_____

Assignment 7

(S)Section 2.2, Page 74: #1, 2, 4, 8, 12, 13, 25, 27, 42(a) ← Use factoring to find this limit.

(S)Section 2.4, Page 95: #1, 4, 13, 15, 21, 26, 29.

(S)Section 2.3, Page 84: #3, 4, 10, 11, 19, 21, 24, 26, 27, 45, 46.

-Due date: Monday, March 9, 2009_____

Assignment 8

(S)Section 2.5, Page 105: #3, 5, 6, 7, 13, 16, 17, 21, 37, 38.

(S)Section 3.1, Page 119: #3, 5, 7, 11, 13, 17, 38, 39.

-Due date: Monday, March 23, 2009_____

Assignment 9

(S)Section 3.2, Page 131: #3, 5, 9, 10, 19, 22, 23, 24, 34, 35, 39, 52, 54.

(S)Section 3.3, Page 144: #5, 8, 13, 14, 23, 27, 30, 37, 39, 67, 89.

-Due date: Wednesday, April 1, 2009_____

Midterm Exam 2 – Friday, April 3rd

Assignment 10

(C)Section 6.1, Page 431: #2, 7, 8, 25, 30, 31, 32, 36, 39, 40, 44.

(C)Section 6.2, Page 442: #19, 22, 25, 27, 35, 36, 40, 43, 48, 49, 52.

(C)Section 6.3, Page 451: #1, 2, 4, 5, 17, 19, 21, 23, 30, 32, 40.

-Due date: Wednesday, April 8, 2009_____

Assignment 11

(C)Section 6.4, Page 469: #2, 10, 12, 13, 41, 48, 53, 58, 63.

(C)Section 6.5, Page 478: #28, 32, 40, 48, 49.

(C)Section 7.1, Page 495: #2, 3, 6, 11, 34, 39, 40.

(C)Section 7.2, Page 501: # 5(a)(b), 7, 11, 12, 30, 31, 34.

-Due date: Monday, April 13, 2009_____

Assignment 12

(C)Section 8.1, Page 584: #2, 3, 7, 8, 17, 19, 25, 38, 43, 62.

(C)Section 8.2, Page 595: #2, 3, 7, 9, 10, 13, 19, 21, 36, 39, 40, 41, 44, 55.

(C)Section 8.4, Page 616: #5, 6, 9, 10, 11, 13, 17, 18, 19, 20, 45, 46, 47.

-Due date: Monday, April 20, 2009_____

Midterm Exam 3 – Monday, April 27th

Assignment 13

(C)Section 9.1, Page 653: #1, 12, 13, 15, 16, 19, 31, 49.

(S)Section 3.4, Page 154: #1, 2, 5, 6, 10, 13, 21, 22, 33, 39, 42, 43.

-Due date: Friday, May 1, 2009_____

Note: (C) denotes that the assigned problems are from the Cohen textbook.

Assignment 14

(S)Section 3.5, Page 161: #1, 4, 5, 6, 9, 19, 21, 23, 31, 37, 40, 44, 65.

(S)Section 3.6, Page 169: #2, 7, 12, 15, 19, 27, 29, 33, 53.

(S)Section 3.8, Page 169: #1, 3, 5, 12, 15, 18.

-Due date: Friday, May 8, 2009

Note: (S) denotes that the assigned problems are from the Stewart textbook

Final Exam – Thursday, May 14th from 10:30AM – 12:30 PM
