Math 602 Homework #4, Spring 2016

Instructor: Ezra Miller

Solutions by: ...your name...

Collaborators: ...list those with whom you worked on this assignment...

Due: start of class on Monday 28 March 2016

READING ASSIGNMENTS in [Eis95]

- by Monday 21 March: §10.3, §7.1 (lecture will assume you know inverse limits in detail)
- by Wednesday 23 March: all of Chapter 5 (this is 7 pages, in total)
- by Monday 28 March: Theorems 7.1–7.2, §7.5
- by Wednesday 30 March: §7.4, §7.2, §7.6

EXERCISES

An exercise whose label is of the form C.n refers to the n^{th} exericse in [Eis95, Chapter C].

5.2

5.3

5.4

5.8 (a)

(b)

10.1

10.2 (a)

(b)

10.3 Solve the problem, and explain your solution in geometric terms.

10.4

10.6

10.8

10.12

- See the notational conventions preceding Exercise 10.11.
- The sum defining $h_M(t)$ should be over $n \in \mathbb{Z}$, not $n \geq 0$.
- You may use whatever proof methods you like, including Hilbert's Syzygy Theorem.

(a) (The phrase "as a polynomial" should be "as a Laurent polynomial".)

(b)

(c)

10.13 (a)

(b)

(c)

References

[Eis95] David Eisenbud, *Commutative algebra, with a view toward algebraic geometry*, Graduate Texts in Mathematics Vol. 150, Springer–Verlag, New York, 1995.