Corrections to the second printing of

Commutative Algebra with a View Toward Algebraic Geometry

This file contains all the corrections to the second printing that I knew of as of 9/7/98. References are of the form **n;m.** where n is a page number in the second printing, m a line number. Descriptive matter (that is, things not actually appearing in the text) is surrounded by double parentheses ((like this)).

—David Eisenbud

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on title page, or somewhere else prominent

Insert:

Third corrected printing

22; 15.

Replace:

is an

by:

is a primitive

35; 8.

Delete:

reduced

36; -7.

After

category of

insert:

reduced

43; -13.

Replace:

this is

by:

we make the convention that this is

52; 8-15.

Replace:

((the labels a-h))

by:

((the numbers 1-8))

52; -8.

Replace:

a and b

by:

1 and 2

52; -7.

Replace:

g and h

by:

7 and 8

52; -4.
Replace:

c,d and h

by:

3,4 and 8

57; -2.
Replace:

3.5

by:

I.3.6

67; 9.
After

ideals

insert:

P

83; 1–2.
Replace:

x

by:

f ((two occurences))

90; -7.
Replace:

union

by:

finite union

111; 12.
Replace:

in press

by:

1995

118; -8.
Replace:

algebra

by:

algebraic

118; -5.
After

).

insert:

Assuming that X and Y are affine, so is Y', and its coordinate ring is the normalization of the image of $A(Y)$ in $A(X)$.

124; 4.
Replace:

Lemma

by:

Theorem

129; -14.

Replace:

Hartshome

by:

Hartshorne

130; fig 4.4.

Replace:

((the upside down U))

by:

$\cap$

139; -10 .

Before

Let

insert:

((as a new part a.))

a. Show that the quotient field of $k[\Gamma]$ is $k[G(\Gamma)]$.

139; -7.

Replace:

its quotient field

by:

$k[x_1, \ldots, x_n]$

139; -6.

Replace:

a.

by:

b.

140; 3.

Replace:

b.

by:

c.

140; 5–10.

Delete:

the whole of part d.

140; 12.

After

{

insert:

(

149; -20.

After

ideal

insert:

such

154; Figure 5.2, first line under the left-hand picture.

Replace:

in $(y^2$

by:

in$(y^2$

159; -8.

Replace:

$a \neq 0$

by:

$0 \neq a$

187; -8.

Replace:

equation

by:

expression

---

187 ;-2.

Replace:

5/32

by:

5/128

189; 5.

Replace:

e_j

by:

$\sum_{j \neq i} e_j$

189; 6.

After

$= 0$

insert:

for each $j \neq i$

189; 6.

Replace:

$m = e_j(n')$

by:

$m = \sum_{j \neq i} e_j(n'_j)$

189; 7.

Replace:

$n_j \in M$

by:

$n'_j \in M$

189; 7.

Replace:

$e_j(m) = \ldots = m$

by:

$\sum_{j \neq i} e_j(m) = \sum_{j \neq i} e_j(\sum_{j \neq i} e_j(n'_j)) = \sum_{j \neq i} e_j(n'_j) = m$

189; 8.

Replace:

$e_j(M)$

by:

$\sum_{j \neq i} e_j(M)$

189; -18.

Delete:

$[x]$ ((three occurences))

189; -15.

After

(commutative)

insert:

local

189; -4.

Replace:

$\bar{e}_1$

by:

e_1

190; 18.

After

((end of line))

insert:

Also, the hypothesis "local" is unnecessary: see Proposition 7.10.

194; 4.

Replace:

((the first subscript)) $_j$

by:

((the subscript)) $_n$

195; 4.

Replace:

m

by:

((fraktur)) m

195; 15.

Replace:

$1 + x$

by:

$1 - x$

195; 17.

Replace:

$1 + a$

by:

$1 - a$

195; 19.
Replace:

$1 - a + a^2 - \ldots$

by:

$1 + a + a^2 \ldots$

195; 20.
Replace:

$1 + a$

by:

$1 - a$

195; 21.
Replace:

((the display))

by:

$(1 - a) + (1 - a)a + (1 - a)a^2 \ldots$

195; 22.
Replace:

$1 + a^i$

by:

$1 - a^i$

200; -15.
After

for each i

insert:

and taking convergent sequences to convergent sequences

201; 17.
Replace:

$)^{i+j}$

by:

$)^{i+j-1}$

203; 19.
Replace:

A1.3c

by:

A1.4c

204; 9.
Delete:

$\tilde{K} \subset$

204; 14.
Replace:

$\tilde{a} \in \ldots = \tilde{K}$

by:

$\tilde{a} \in R$

204; 16.

Replace:

$\tilde{K} = \varphi(K)$

by:

$\tilde{K} \subseteq \varphi(K)$

204; 19–20.

Replace:

((entire lines 19-20))

by:

so φ is a homomorphism and $\varphi(K)$ is a coefficient field containing $\tilde{K}$. The previous paragraph shows that $\varphi(K) = \tilde{K}$

204; -11.

Before

Since

insert:

We may assume that $\bar{u}'_w$ and $\bar{r}_w$ are nonzero.

204; -10.

Replace:

k^q

by:

k

217; 10.

Replace:

1.15c

by:

1.15b

227; -4.

Replace:

Equivalently. it

by:

Equivalently, it

230; 18.

Replace:

dimenion

by:

dimension

237; -18.

Delete:

and using Nakayama's lemma,

238; -11 – -10.

Replace:

parameter ideal

by:

ideal of finite colength on

241; Figure 10.4.

The X at the upper right should be Y; the Y at the lower right should be X

242; 4.
Replace:

R_P/PR_P

by:

R/P

242; 6–8.
Replace:

R_P

by:

R ((three occurences))

244; 3.
Replace:

the maximal ideal is generated by x

by:

the maximal ideal is generated by y

244; 4.
Replace:

$k[x]_{(x)}$

by:

$k[y]_{(y)}$

244; 5.
Replace:

$k(x)$

by:

$k(y)$

248; 20.
Replace:

dimensionsion

by:

dimension

253; -12.
Replace:

$ar = bs$

by:

$r^n \in (s)$

253; -12 − -11.
Replace:

a zerodivisor. . . of s.

by:

nilpotent modulo (s) and is contained in the minimal primes of (s).

253; -11 − -11.
Replace:

this

by:

each

253; -10.
Replace:

associated

by:

minimal

254; -21
Delete:

the end of proof sign at the end of the line

254; -14.
Replace:

Continuing

by:

To complete

254; -14.
Delete:

next

255; 2.
Insert:

the end of proof sign at the end of the line

258; 17.
Replace:

R

by:

R_P ((two occurences))

258; 19.
Replace:

Since. . . =0

by:

Since $\ker(\varphi_i)_P \otimes R_P \varphi_i$ maps to $(\varphi_i)_P \ker(\varphi_i)_P = 0$

260; 4.
After

$K(R)$

insert:

modulo the units of R

260; 10.
Replace:

so it

by:

. We have $Ru = Rv$ iff u and v differ by a unit of R, so we may identify the group of principal divisors, under multiplication, with the group $K(R)^*/R^*$. If I is any invertible divisor and Ru is a principal divisor, then $(Ru)I = uI$. Thus it

---

276; -15 – -13.
Replace:

Suppose. . . . ((whole sentence))

by:

Suppose that $q \subset R$ is an ideal of finite colength on M. ((q should be fraktur))

276; -1.
Replace:

$M/x_1, M$ ((part of the subscript in the middle))

by:

M/x_1M ((that is, delete the comma))

277; -14 – -13.
Replace:

parameter ideal

by:

ideal of finite colength on

277; -11.
Replace:

where. . . with

by:

where the polynomial F has

277; -11.
Replace:

whose degree is

by:

degree

278; 2.
Replace:

((comma at the end of the display))

by:

((period))

278; 3,4.
Replace:

((the entire two lines))

by:

The equality shows that F has positive leading term, while the inequality gives the desired degree bound.

282; 12.
Replace:

(n) ((second occurence only!!))

by:

(i)

287; -3.
Replace:

In fact, if

by:

If

288; 2.
Replace:

A

by:

R

289; -3.
Replace:

$x'_1 - a_1x'_e, \ldots, x'_{e-1} - a_{e-1}x'_e$ ((beginning of the displayed list))

by:

$x''_1, \ldots, x''_{e-1}$

291; -21.
After

a field

insert:

, R is generated by R_0 over R_1,

291; -10.
After

is a field

insert:

and $Q_0 = 0$

291; -7.
Delete:

$Q_0\oplus$

296; -3.
Replace:

Let

by:

If f is a unit the assertion is obvious. Otherwise, let

298; 2,3.
Replace:

L

by:

L' ((two occurences))

301; 17.
Replace:

Theorem 13.7

by:

Theorem 13.17

303; 8,9,10.
Replace:

S_I

by:

B_I ((Three occurences))

303; -1.
Before

((the period))

insert:

with equality if R is universally catenary

308; 1–3.
Replace:

((the first paragraph))

by:

We will prove Theorem 4.1 as the special case $e = 0$ of Corollary 14.9 to the much stronger Theorem 14.8. For a direct proof see Exercise 14.1.

308; after 3, as a new paragraph.
Insert:

In general, a morphism $\varphi : Y \to X$ of algebraic varieties is called *projective* if φ can be factored as $Y \to X \times \mathbf{P}^n \to X$ with the first map a closed embedding and the second map the projection. In these geometric terms, Theorem 14.1 says that a projective morphism is *closed* in the sense that it takes closed sets onto closed sets.

308; -21.
Replace:

kernal

by:

kernel

310; -3.
Replace:

Andre

by:

André

316; after line 10; just after theorem 14.8.
Insert:

Let us restate Theorem 14.8 (or rather its consequence for reduced affine algebras over an algebraically closed field) in geometric terms: Suppose that $R \to S$ corresponds to a morphism of varieties $\varphi : Y \to X$. Set $F_e = \{x \in X \mid \dim \varphi^{-1}(x) \geq e\}$ and let G_e be the set of all points of y so that the fiber $\varphi^{-1}(\varphi(y))$ has dimension $\geq e$ locally at y. That is, G_e is the union of the large components of the preimages of points of F_e. Theorem 14.8 says that G_e is defined by the ideal I_e and is thus closed. If the morphism φ is projective then F_e is defined by J_e, and is closed as well. Note that F_e is the image of G_e, so we could deduce part b of Theorem 14.8 from part a together with Theorem 14.1—if it weren't that we will only prove Theorem 14.1 by using part b.

319; 2.
Replace:

principal

by:

principle

330; -17.
Replace:

((the boldace type))

by:

((roman type))

331; 13.
After

((end of line))

insert:

((an "end of proof" sign))

332; -18.

Replace:

with basis F

by:

F with basis

341; 4.

Replace:

irreducible

by:

irreductible

342; -19 – -18.

Delete:

refines the order by total degree and

342; -15.

Replace:

Equivalently, as the reader may check, a

by:

A

342; -15.

Replace:

is ((last word))

by:

may be

342; -14.

Delete:

either. . . same and

374; 14 (first line of Exercise 15.33).

Replace:

$x =$

by:

$X =$

411; 16.

Replace:

an algebra map

by:

a surjective algebra map

417; -13.

Replace:

Let

by:

Suppose that R contains a field of characteristic 0, and let

417; -8.

After

field

insert:

of characteristic 0

430; 4.
Replace:

M

by:

$M \neq 0$

430; 5.
Replace:

some k

by:

some $k < n$

434; 12.
Replace:

mapping cylinder

by:

mapping cone

434; 19.
Replace:

mapping cylinder

by:

mapping cone

436; 3.
Replace:

x_r

by:

x_n

436; 3.
Replace:

$\neq$

by:

$\neq 0$

436; 4.
Replace:

x_r

by:

x_n

436; 4.
Replace:

17.4

by:

17.14

437; 8.
Replace:

$m \otimes 1 - 1 \otimes m$

by:

$m \otimes 1 + 1 \otimes m$

439; -3.

The two arrows labeled with β should point downwards.

439; -2.

Replace:

$K(x^*)$

by:

$K'(x^*)$

440; 5.

Replace:

$H_{n-k}(K(x), \delta_{x^*})$

by:

$H_{n-k}(K'(x^*), \delta_{x^*})$

443; -18.

Replace:

$S/(x_1, \ldots, x_r)$

by:

$S/(y_1, \ldots, y_r)$

444; 3.

Replace:

e_j

by:

e_J

446; 9.

Replace:

3.16

by:

13.16

448; 8.

The σ should be situated on the final arrow.

459; -3.

Delete:

Let R be a Cohen-Macaulay ring.

462; 13.

Replace:

11.12

by:

11.10

462; -16.

Replace:

S1'

by:

S1

466; -10.

Replace:

7.17

by:

7.7

468; 11.

Replace:

Fulton [1992]

by:

Fulton [1993]

471; 10.

Replace:

a domain iff $r \geq 3$

by:

a normal domain iff $r \geq 3$

471; 10.

Delete:

normal iff $r \geq 4$;

473.

Before

the first line of text ((as on p. 423))

insert:

In this chapter all the rings considered are assumed to be Noetherian

---

476; 2

Replace:

R-module

by:

module over a regular local ring of dimension n

477; 11.

Replace:

PF_n

by:

PF_{n-1}

477; 11.

Replace:

i

by:

$i \geq 0$

478; -11.

Replace:

Corollary 15.13

by:

Corollary 15.11

478; -10.

Replace:

Corollary 19.6

by:

Corollary 19.7

484; -9 – -8.
Replace:

It turns... remark.

by:

We begin with a simple observation:

487; 13.
Delete:

((the end of proof symbol at the end of the line))

487; -6.
Replace:

R_P

by:

$R[x^{-1}]_P$

487; -1.
Insert:

((an end of proof symbol at the end of the line))

490; -18.
Replace:

$\dim_k(M_d)$

by:

$\dim_k(M_d)t^d$

492;3.
Before

the homogeneous

insert:

which is

492; -7.
Replace:

polynomial

by:

family of polynomials $c_t(M)$

492; -4.
Delete:

Chern and

492; -5 – -1.
Replace:

((the whole last paragraph))

by:

Knowing the Hilbert polynomial of a module M is equivalent to knowing the Chern polynomial $c_t(M) = 1 + c_1(M)t + c_2(M)t^2 + \ldots \mod t^{n+1}$ and the rank of M. We sketch this equivalence: The Hirzebruch-Riemann-Roch formula allows one to deduce the Hilbert polynomial from the Chern classes and the rank as follows: First form the *Chern character,* which is a power series of the form $\operatorname{rank}(M) + c_1(M)t + \frac{1}{2}(c_1(M)^2 - 2c_2(M))t^2 + \ldots \mod t^{n+1}$. The Hilbert polynomial $P_M(d)$ is equal, for large d, to the coefficient of t^n in the expression

$$e^{nt}\left(\frac{t}{1-e^{-t}}\right)ch(M).$$

See Hartshorne [1977] Appendix A4, or Fulton [1984], especially chapter 15. Conversely, to compute the Chern polynomial from the Hilbert polynomial, consider first the special case $M = S_j := S/(x_1, \ldots, x_j)$. From the Koszul complex resolving M and properties i and ii above we see

$$c_t(S_j) = \frac{\prod_{i \text{ even}} (1-it)^{\binom{n-j}{i}}}{\prod_{i \text{ odd}} (1-it)^{\binom{n-j}{i}}} \operatorname{mod} t^{n+1}.$$

Now any Hilbert polynomial can be written (uniquely) in the form $P_M = \sum_{j \geq 0} a_j P_{S_j}$. It follows that the Chern polynomial of M is $c_t(M) = \prod_{j \geq 0} a_j c_t(S_j)$. Of course the rank of M is a_0, completing the argument.

493.
Before

the first line of text ((as on p. 423))

insert:

In this chapter all the rings considered are assumed to be Noetherian

---

497; -15.
Delete:

((the end of proof symbol at the end of the line))

497; -4.
Replace:

$I_j\varphi = I_{j+p}\varphi$

by:

$I_j\varphi = I_{j+p}\psi$

502; -3.
Delete:

((the end of proof symbol at the end of the line))

506; -14.
After

is exact,

insert:

F_2 is free,

506; -10.
Replace:

$I(\varphi_2)$

by:

$I_{n-1}(\varphi_2)$

510; -7.
Replace:

$\operatorname{Ext}^j(M, R)_n$

by:

$\operatorname{Ext}^j(M, S)_n$

521; -12.
Replace:

((the entire line))

by:

$\operatorname{Ext}^j(M, S)_k = 0$ for all $j \leq n-1$ and $k = -m-j-1$.

529; 14.
Replace:

By Proposition 9.2

by:

By hypothesis

529; -19.
Before

whose

insert:

φ

530; 1.
After

Zariski

insert:

Gorenstein rings were defined—in exactly the way done in this book!—in the artinian and graded cases by Macaulay in his last paper [1934] (his definition in the affine case differs slightly from the modern one).

530; 7.
After

attests.

insert:

There is also a well-developed noncommutative theory (Frobenius and quasi-Frobenius rings.)

530; -11.
Replace:

Proposition 21.2

by:

Corollary 21.3

531; 4.
After

x_i

insert:

and x_i^{-1}

531; 5.
Replace:

the S-module... T

by:

T with a sub-S-module of $K(S)/L$

531; 10.
After

generated

insert:

nonzero

531; -14.
Replace:

:=

by:

=

531; -10.
After

any

insert:

nonzero finitely generated

531; -2.
After

).

insert:

(Proof: One checks by linear algebra that these elements generate the part of the annihilator in degrees ≤ 2, even as a vector space. These elements generate all forms of degree ≥ 3.)

532; 11.
After

$x \in A$

insert:

that is also a nonzerodivisor on ω_A

532; -18.
Replace:

21.4d

by:

21.5d

533; -8.
After

condition.

insert:

Note that c implies that the annihilator of W is 0, just as in the special case of Prop. 21.3

533; -3.
Replace:

..

by:

. ((after the Proposition number))

539; 14.
Replace:

x

by:

$x \in R$

543; -17.
Replace:

M/xM

by:

—

544; 13.
Replace:

x_0, x_1

by:

x_1, x_2

544; 18.
Replace:

Enzykolpädie

by:

Enzyklopädie

547; -6.
Replace:

A^n

by:

A^{n+1}

549; -7.
After

such that

insert:

x is a nonzerodivisor on W and

550; first line of Exercise 21.1
After

$y^n)$

insert:

, $n \geq 2$

550; -5.
Replace:

ω_R

by:

R

551; 1.
After

and

insert:

, with the notation introduced just after Proposition 21.5,

551; first two displays.
Replace:

$$\sum_{i_1,\ldots,i_r}$$

by:

$$\sum_{i_1,\ldots,i_r \geq 0}$$

((two occurences))

554; -1.
Delete:

((this entire line))

556; -7.
Replace:

degree

by:

deg ((two occurences))

559; 6.
Replace:

x_1

by:

x_0

559; 13.
Replace:

$\sum d_i - r$

by:

$\sum d_i - r - 1$

575; 8–12 and 13–19.
((These two paragraphs are both definitions, and should be set in italics, with a skip below the paragraph, just as with the first paragraph on this page.))

581; 13.
Before

module

insert:

of rank n

581; 15.
Replace:

λ^d

by:

λ^{n-d}

609; -20.
Replace:

corollary

by:

theorem

609; -7.
Replace:

Corollary

by:

Theorem

623; 10.
Replace:

a variety

by:

an affine variety

630; -17.
Replace:

both E

by:

both E'

630; -4.
Replace:

b.*

by:

b.

631; 1.
Replace:

c.

by:

c.*

645; -9.
Delete:

$0 \to$

652; -11.
Replace:

$E^1(A, B)$

by:

$E^1_R(A, B)$

652; -15.
Replace:

$0 : \; 0 \to A \to A \oplus B \to B \to 0$

by:

$0 : \; 0 \to B \to A \oplus B \to A \to 0$

653; 10.
Replace:

$A.$

by:

$B.$

654; -9.
Replace:

A, B

by:

B, A

654; -7.
Replace:

A, B

by:

B, A

654; -6.
Replace:

A, B

by:

B, A

654; -6.
Replace:

an injective

by:

a projective

654; -5.
Replace:

a projective

by:

an injective

655; 5.
Replace:

A

by:

C

655; 7.
Replace:

C

by:

A

655; 10.
Replace:

C

by:

A

655; 10.
Replace:

A

by:

C

661; -7.
Replace:

$F \to G$

by:

$G \to F$

669; 3,4.
Replace:

F

by:

A ((three occurences))

669; 5.
Delete:

$\bar{F}$

669; 8.
Replace:

F

by:

A

669; 10.
Replace:

F

by:

A ((two occurences))

671; -3.
Replace:

We consider

by:

Let $A = \oplus_{p \in \mathbf{Z}} G^p$, and let $\alpha: A \to A$ be the map defined by the inclusions $G^{p+1} \subset G^p$. We consider

---

671; -2.
Replace:

$H(G)$

by:

$H(A)$

671; -2.
Replace:

$H(G/\alpha G)$

by:

$H(A/\alpha A)$

672; Figure A3.29.
Replace:

G

by:

A ((four occurences))

672; -9.
Replace:

horizontal

by:

vertical

674; 9.
After

$G^q)^p$

insert:

$= \oplus_{i+j=q, j \geq p} F^{i,j}$

674; 10.
After

then in

insert:

$(G^{q+1})^{p+r}$

674; 11.
((delete the display, and close up))

688; 11.
Replace:

$G \circ P \to LF \circ P \to F$

by:

$G \circ P \to LF \circ P \to P \circ KF$

694; -10.
Replace:

R-module

by:

S-module

694; -9.
Replace:

R

by:

S

694; -8. Replace two occurences of R by S. That is,

Replace:

$\mathrm{Hom}_R(---, E(R/P))$

by:

$\mathrm{Hom}_S(---, E(S/P))$

697; 5.
Replace:

collections

by:

collection

728; -9.
Delete:

(by Lemma 3.3)

728; -9.
Replace:

$\in R_i$

by:

$\in R$

743; 16.
Replace:

b.

by:

c.

746; 13–17.
Replace:

((the complete text of the hint for Exercise 20.20 by))

by:

It follows from local duality that if $S = k[x_0, \ldots, x_n]$ is the homogeneous coordinate ring of $\mathbf{P}^n$, then

$$H^j(\mathbf{P}^n; \mathcal{F}(m-j))^\vee \cong \mathrm{Ext}^{n-j}(M, S)_{-n-1-(m-j)}$$

for all j. This gives a. If M has depth ≥ 2 we have $\mathrm{Ext}^{n-j}(M, S) = 0$ for $j \leq 0$ and statement b becomes a direct translation of Proposition 20.16 and Theorem 20.17.

746; -1.
((The dots in the right part of the diagram should run from SE to NW and should connect the two pieces of this part of the diagram, in analogy with what happens in the left part of the diagram.))

747; 15.
Replace:

Theorem 18.4

by:

Proposition 18.4

747; 18.
Replace:

((The displayed sequence))

by:

$$0 \to \mathrm{Ext}^d_R(M'', R) \to \mathrm{Ext}^d_R(M, R) \to \mathrm{Ext}^d_R(M', R) \to 0$$

751; -19.
Replace:

b.

by:

c.

751; -14 – -11.
Replace:

For this value... Q is injective ((three sentences))

by:

The map α thus factors through the projection $I \to I/P^d I$, so by Artin-Rees it factors through the projection $I \to I/(P^e \cap I) \subset R/P^e$ for large e. Since $Q^{(e)}$ is injective over R/P^e, we can extend this to a map $R/P^e \to Q^{(e)}$, and thus to a map $R \to Q$, proving that Q is injective.

758; 5.
Replace:

Théoremes

by:

Théorèmes

758; -19 – -18.
Replace:

((italics))

by:

((roman))

758; -18.
Replace:

Preprint.

by:

Inst. Hautes Études Sci. Publ. Math. 86 (1997) 67–114.

759; 9–13.
Replace:

entire reference

by:

Bayer, D., and M. Stillman (1982-1990) Macaulay: A system for computation in algebraic geometry and commutative algebra. Source and object code available for many computer platforms. See http://www.math.uiuc.edu/Macaulay2/ for a pointer to this and to the successor program Macaulay2 by D. Grayson and M. Stillman.

759; 22.
Replace:

Algébre

by:

Algèbre

759; 28.
Replace:

Algèbre

by:

Algèbre

759; -15.
Insert:

93 (1994) 211–229. ((at end of line))

760; 6.
Insert:

((as new reference)) Buchsbaum, D. A. (1969). Lectures on regular local rings. In *Category theory, homology theory and their applications, I.* Battelle Inst. Conf., Seattle, Washington., 1968, Vol. 1, 13–22. Springer Lect. Notes in Math. 86

760; -8.
Replace:

1944

by:

1943

761; -9.
Replace:

Schopf

by:

Schöpf

762; 6.
Replace:

in the

by:

is the

762; -13 – -12.
Replace:

(in press).

by:

Duke Math. J. 84 (1995) 1–45.

763; -18 – -14.
Replace:

the whole Gelfand-Manin reference

by:

Gelfand, S. and Y. I. Manin (1989–1996). *Methods of homological algebra.* Springer-Verlag, Berlin, 1996. English translation of the 1989 Russian original.

764; 24.
Replace:

Les foncteurs . . . continu ((the whole title))

by:

Catégories dérivées et foncteurs dérivés

764; -14.
Replace:

point

by:

points

766; 1.
Replace:

Der Frage

by:

Die Frage

766; 15.
Replace:

((boldface type))

by:

((roman))

767; -15.
Replace:

Time

by:

Times

767; -12.
Replace:

van

by:

von

768; 11.
Replace:

Birkhauser

by:

Birkhäuser

---

769 Insert as a new referece.
Insert:

Macaulay, F.S. Modern algebra and polynomial ideals, *Proc. Cam. Phil. Soc.* 30, pp. 27–64.

770; -14.
Replace:

van

by:

von

770; -12
Replace:

in press

by:

1996

771; 7.
Replace:

Rabinowitch

by:

Rabinowitsch

772; -12.
Replace:

Bemerking

by:

Bemerkung

772; -12.
Replace:

van

by:

von

773; -18.
Replace:

Uber

by:

Über

773; -16.
Replace:

Bezout

by:

Bézout

773; -2.
Replace:

Its

by:

its

774; 4.

Replace:

1994

by:

1995

774; 5.

Replace:

(preprint)

by:

J. Algebraic Combin. 4 (1995) 253–269.

775; -16 – -15, second column.

Insert:

$\kappa(P)$, residue field, 60

776; -0, second column.

Insert:

$E(M)$, injective envelope, 628

785; 20, second column.

Replace:

18

by:

17

789; 10, second column.

Replace:

Kozul

by:

Koszul

790; 8 of second column.

After

M-sequence,

insert:

243,248,423ff,

793; -17 of first column.

Replace:

167

by:

308,316
