Elementary Algebraic Geometry by Klaus Hulek - Errata

p 13, Exercise 0.14: Strictly speaking this argument shows that GL(n, k) is in bijection to an algebraic set. The reader should also consult Proposition 1.84 to complete the argument.

p 15, Exercise(1) and (2): Delete the word 'variety' which has not been defined.

p 15, Exercise 1a: Insert a left parenthesis before $\cos t$.

p 15, Exercise 3: The term 'qualitatively different pictures' is not well defined, to give it the intended meaning one should think of the projective classification of (irreducible) cubics.There are moreover five different types.

p 19, l 10: $J \subset \sqrt{J}$.

p. 28, Nakayama Lemma: This is not correct as it stands. Either (B, m) is assumed to be a local ring or m must be contained in the Jacobson radical of B.

p 24, l -1: which are precisely the polynomials without constants.

p 28, l 7: Delete the end of the sentence 'and so $B[x]$ is a finite B-algebra' (This extra phrase belongs to part (3) of the lemma, rather than part (2).)

p 29, l 11: $f(x'_1 + \alpha_1 x_n, \ldots, x'_{n-1} + \alpha_{n-1} x_n, x_n)$.

p 33, l 13: $\mathbb{A}^2_k$ should be $\mathbb{A}^3_k$.

p 33, l 13: $k[x_1, x_2, x_2]$ should be $k[x_1, x_2, x_3]$.

p 33, l 21: $\{(x, a, b) \mid x^2 - ax - ab = 0\}$.

p 34, l 5: intuitive.

p 34, l -10: polynomial.

p 34, l -6.: all nonconstant polynomials.

p 36, l 1: integral domain.

p 47, l 17: $\varphi = F(f)$, $G(\varphi) = f$.

p 55, l -2: irreducible.

p 56, l 22: $f^*(y/x)$.

p 59, l 13: Delete the stray comma. The target of the map is C, and not $\mathbb{C}$.

p 68, l 2-4: The quadrics are in $\mathbb{P}^3_k$, rather than $\mathbb{P}^2_k$. The definitions should read

$$(x_0 : x_1 : x_2 : x_3) \in \mathbb{P}^3_k.$$

p 69, l-2: To make the decomposition unique we must require that $f \neq 0$, the d_i are distinct, and the f_i are nonzero.

p 78, l 10: Delete the word 'homogeneous.'

p 85 l 14: lowest common denominator.

p9, l-1: $((\mu t, \lambda t), (\mu : \lambda))$.

p 94 Exercise 2(c): 'projective transformations' are not formally defined until page 117; however they are defined in passing later in this exercise set, exercise 10 (page 95).

p 94, Exercise 4: 'projective variety' should read 'irreducible projective variety' since morphisms were only defined on irreducible projective and quasi-projective varieties.

p 95 Exercise 7: The condition on the rank should be < 2.

p10, l -6: tr $\deg_k K$

p 112, Exercise 5: Replace $\mathbb{A}^2_k$ with $\mathbb{A}^3_k$.

p 120, l 10: Lemma 4.5.

p 128, l 12: $z_I z_J = z_K z_L$ for $I + J = K + L$.

p 159, l 14: The l_i'' are different from the l_j'. Otherwise if $l_i'' = l_i'$, then l and m would be lie on the plane of $l_i \cup l_i' = l_i \cup l_i''$, giving four coplanar lines l, m, l_i, l_i', contradicting Proposition 5.11. Also, $l_i'' \neq l_j'$ for $i \neq j$ since $l_i'' \cap l_i \neq \emptyset = l_j' \cap l_i$.

p 160, l 14: (2) n cannot intersect fewer than two of the l_i. Otherwise it would intersect, say l_1', l_2', l_3', and l_4'. But then n, l and l_5'' would be three common transversals to those lines and hence contradict Lemma 5.14.

(3) n cannot intersect precisely two of the l_i. In this case we could assume that n intersects l_1', l_2', l_3', l_4 and l_5. But now n, l and l_4'' would be common transversals to l_1', l_2', l_3' and l_4, again contradicting Lemma 5.14.

p 161, l 9: m meets $l_1'', \ldots, l_5''$ and $l_1, \ldots, l_5$.

p 173, l 1: $t \circ f$.

p 177, l -11: Replace 'algebraic closure' with 'integral closure'.

p 179, l-16: Replace 'algebraic' with 'integral'.

p 179, l -10: $U = f^{-1}(V)$.

p193. The order of Corollaries 6.50 and 6.51 should be interchanged.

p 197, l 7: $C \to \mathbb{P}_k^1$.

p 198, l 11: The Grassmannian $G(1, n) \subset \mathbb{P}_k^n$ can be identified with the subset of $\mathbb{P}(\bigwedge^2 k^{n+1})$ of the images in this projective space of nonzero tensors of the form $v \wedge w$.

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