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## Chapter 16

1 message

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Wed, Nov 22, 2023 at 6:35 PM

To: Joe Harris &lt;harris@math.harvard.edu&gt;, David Eisenbud &lt;de@berkeley.edu&gt;

Dear Joe and David,

Here are some thoughts on Chapter 16.

Best, Izzet

page 301, line 2 of 16.2.1, is should be if

page 304, line 2 of second paragraph, broken reference

page 305, line -4, broken reference

page 306, line 4 of 16.3, missing ) in  $\pi_*(O(1))$ 

page 307, line 10 of Theorem 16.3.1, repeated the in the the restriction

page 307, line 8 of Corollary 16.3.2, do you want the target of the isomorphism to be  $P(O + O(a_2))$ ?

page 310, line 2, there is an additional 'We'

page 310, line 4, Should  $S(a,b)$  be  $S(a_1, a_2)$ ?

page 312, line 6 of proof of 16.4.8, we should not be capitalized

page 312, first sentence of last paragraph of the proof of 16.4.8, do you mean nonzero for all  $i$ , also you have a missing parenthesis ) in  $H^0(O(p+qa_1))$ page 312, line 4 of last paragraph of the proof of 16.4.8, missing parenthesis ) in  $P(O(a_1))$ 

page 312, Proposition 16.4.9, maybe a comma instead of a period and maybe add 'then'

page 313, line 2 of proof of 16.4.9, do you want an isomorphism sign between  $\pi^*(E \otimes L)$  and  $\pi^*(E) \otimes \pi^*(L)$ ?

page 314, last sentence of the proof of 16.4.11, something is a little off here

page 315, exercise 16.5.4, do you capitalize Lemma?

page 315, exercise 16.5.7, do you want to assume smooth?

page 315, exercise 16.5.8, broken reference

page 315, exercise 16.5.9, line 3, missing ) in  $H_*^1(I_{D/X})$ 

page 315, exercise 16.5.10, broken reference

page 315, exercise 16.5.11, there are some typos in the hint

page 315, exercise 16.5.12, extra comma in line 2  $0 \leq a_1 \leq a_2$ , repeated is in line 3page 316, line 3 of exercise 16.5.14,  $PGL_{\{r=1\}}$  should be  $PGL_{\{r+1\}}$ page 316, line -4, there are some typos here instead of  $p_a)_r$  should it be  $p_r$ ?

page 317, exercise 16.5.15, broken reference

page 317, exercise 16.5.16, missing parenthesis ) in line 4

Do you not want to give the Maroni bound? This chapter is the perfect place to discuss it. That's another way of doing 16.5.16. If a scroll  $S(a,b)$  contains a trigonal canonical curve  $C$ , then we must have  $C \cdot C_a \geq 0$ . Using  $a+b = g-2$  and  $C \sim 3C_a + (2g-2-3a)F$ , we see that  $3(a-b) + (2g-2-3a) \geq 0$  or  $2g-2 \geq 3b$ , equivalently,  $\frac{1}{3}g + \frac{2}{3} \geq b-a$ .

I am getting a little tired, so it is likely I missed a bunch of stuff in Chapters 15 and 16. I will try to read 17 and 18 in the next couple of days.