

1. *Assignment*
 - a. We'll have time in the course for discussion of a couple more topics. Suggestions?
 - b. Research the question proposed by Prof. Ardila, as described below.
2. *Endgame*. This class ends 14 May. There is no scheduled activity after that.
3. *Writing for PR*
 - a. Too few mathematicians have acquired any knack for public-relations writing. As a result, articles about mathematics and mathematicians targeted at a broad audience—for instance, all those who hold degrees in scientific subjects—are often misleading or outright inaccurate. This situation has been improving in recent years as a few highly trained mathematicians have become professional writers associated with mathematical associations and with journals that address such audiences.
 - b. But those are the *top* outlets for such writing. Universities, technical industries, and even schools benefit from good writing about mathematical activity in their communities.
 - c. Each year our College of Science and Engineering publishes an issue of its *Intersci* journal containing papers written by the previous year's science-writing class. Each issue generally contains one article about mathematics. The current issue, due any day now, will contain one about me, by Patricia Wallace. I think Ms. Wallace did a very good job, considering that she had virtually no previous experience with mathematics (although, obviously, a lot of experience with the world). She was the best interviewer I've ever encountered. One of the problems such writers encounter, incidentally, is their editors' own misconceptions about mathematics. We have to persuade more than one level of writer to say it right!
 - d. Once every two years or so the Mathematics Department publishes a newsletter full of this sort of writing. There's a link to its most recent issue on this course's home page. Writing and editing these articles was great fun for me, particularly "Shoestrings," a decorous form of shaggy-dog story. Its story line and punchline resulted from a rapid-fire elevator conversation one day with Prof. Goetz, gleeful after some successful troubleshooting!
 - e. The flashy design of that newsletter was due to the College's graphics designer, Diane Fenster. Mathematicians hold varying opinions about it.
 - f. Cultivating a skill in this kind of writing can lead to interesting sidelines in professional work!
4. *Finding Mathematical Information*
 - a. I introduced my website with that title. There is a link to it on this course's home page. This effort stemmed from experience when I served on the Library Advisory Committee. One year we were concerned with the Library's OASIS online tutorial. I noted that it didn't provide much for mathematics

students, observed how it was being designed, then resolved to imitate it for our students in particular.

- b. You can observe some design features that this kind of writing shares with presentations: separation into highly-organized high-impact low-content screens, terse prose, and unified style.
 - c. This was all done with Microsoft *FrontPage*, using one of its example style-sheets for the graduated-fill backgrounds and font choices. Each screen is a separate *.htm file. The most difficult aspect of the implementation was designing the links and keeping track of them, and checking them, so that in the end they're all connected properly.
5. *Digging for sources*
- a. In this morning's Math 490 lecture on Coxeter groups, Prof. Ardila stated and proved a background fact: *Sylvester's theorem* about positive-definite real symmetric matrices. After his elegant recursive proof he wondered how Sylvester ever discovered the theorem. (A recursive proof hardly ever reveals the train of thought that led to the statement of the theorem.)
 - b. I propose his question as an example one for this class.
 - i. Virtue: Sylvester wrote mostly in English.
 - ii. Drawback: some of his work was completed before the beginning of the review journals.
 - iii. Virtue: I haven't rehearsed this, so an example search may be realistic.
 - iv. Drawback: That search may not be fruitful!
 - c. The theorem says that a real symmetric matrix is positive-definite if and only if all its principal minors are positive. A square matrix A is called *positive-definite* if $v^T A v > 0$ for all vectors v of compatible dimension. A *principal minor* of A is the determinant of a square matrix occupying an upper-left corner of A .
 - d. Prof. Ardila told me that he had found the proof in a not-too-recent-but-not-old issue of the *American Mathematical Monthly*.
 - e. *Finding Mathematical Information* suggested that we search *JStor* for that article: all but the most recent five years of the *Monthly* are accessible and searchable there. We started such a search, but did not succeed in the time available.