

03/10/2008

## **A Proposal for Establishing a Journal for the Mathematical Community At King Abdulaziz University (KAU)**

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### **Abstract:**

This paper presents an outlined proposal for establishing an undergraduate-level monthly journal of mathematics for the mathematical community at KAU. I start with stating its goals, then, proceed to describe its design, contents, and finally discuss related matters like distribution, submission guidelines, and philosophy of the journal.

### **Overview:**

Here in my university, I always observe that mathematics students almost never try to go to the Central Library for the purpose of *free* mathematical reading, whether to gain knowledge beyond what is written in textbooks or looking for supplementary books that expand their understanding of taught material. I am certainly optimistic that there must be few ambitious mathematically well-read students. But I think much effort should be devoted to enriching students' mathematical knowledge and to creating a generation of mathematicians responsible for communicating the role of mathematics in the 21<sup>st</sup> century and popularizing its connections to other disciplines, especially natural sciences, and everyday life.

On the other hand, having a monthly mathematics journal to read is a source of motivation and pleasure for every attentive student. And it will expectedly raise the indifferent students' attention to study properly, for the journal will publish, as explained below, lessons and expositions written by outstanding students.

Many math lovers may already feel the beauty of mathematics and have sense in its connection to other disciplines. But if this love is not associated with serious hard work, it means nothing. We want students to further appreciate mathematics through discovering new horizons and exploring the frontiers of their knowledge, hence, building foundations for contributing to the dissemination of this great science.

From this standpoint I present this proposal paper in which I introduce an outlined proposal for establishing a simple monthly journal of mathematics meant to fulfill this need. This journal will be a collaborative effort mostly among KAU math undergraduates.

There are three main goals for this project: (i) to increase awareness of the current role of mathematical sciences in other disciplines, specially natural sciences, and everyday life, (ii) to

encourage engagement of math undergraduates in mathematical writing, which in turn cultivates their mathematical abilities and expands their mathematical knowledge, and (iii) to create a medium for communicating mathematics, ideas, and concerns among the KAU mathematical community. Based on these well-defined goals, I write this outline describing the proposed sections and different materials to be presented in the journal.

## Description of the Journal

This monthly journal is dedicated primarily for math undergraduates. It is simple designed so that contributing students can maintain its progress and continuity. It is a collective work; any undergraduate can contribute to the journal, whether in designing, editing, producing, writing, translating, or preparing its enriching material. The journal is mainly divided into three sections: essential monthly contents, students' work, and press reading. Pursuing its goals, the journal will publish in two languages: Arabic and English, as relevant. The contents page and title page will appear in English as well as in Arabic. A more ample description of my vision of the journal is outlined as follows:

**1- Design:** the design of the journal should be very simple to ensure maintaining permanent work of the journal before the contributing students. Yet it is attractive and new to appeal to the intended readership. A definite color will be specified as the dominant color for each issue. We may use the Photoshop software to design banners, headers, editing pictures, etc.

**2- Contents:** As stated above, the contents of the journal is broken up into three main sections: essential monthly contents, students' work, and press reading.

### I. Essential Contents:

Essential Contents represent the minimum entries to be published monthly. The editorial board is responsible for preparing the materials of this section for each issue. These include:

- 1) **Cover Page:** In each issue, the cover page represents an image highlighting a particular mathematical concept, a mathematician, or any thing that has a mathematical core or significance. A special space inside will be given to describing the image or giving some informative background about it, and the page number will be referred to on the cover. This idea is adapted from the Notices journal<sup>1</sup>.
- 2) **Table of Contents and the editorial:** a table of contents is listed in a single page. The editorial is written by the editor. It is a one-page article highlighting a topic of the editorial's choice in which she discusses or treats any issue related to mathematics,

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<sup>1</sup> The Notices website: <http://www.ams.org/notices/>

mathematicians, or mathematical community, something related to the journal, or any other relevant information of interest and importance to the readership.

- 3) **From the readers:** this section introduces short opinions sent by readers regarding a specific topic that has been published before, suggestions, comments, or other concerns of KAU mathematical community. They will be issued to the journal with the reader's name, e-mail, and date of receipt.
- 4) **Opinion:** this is an article written especially for the mathematical community at KAU. Here any math student or member of faculty can write an article for this section. A typical article for Opinion discusses common concerns and thoughts regarding a math-related issue or addressing a problem or suggestions for KAU mathematical community.
- 5) **News of Mathematics and Mathematicians:** this will represent an essential part and important purpose of establishing the journal as it will keep students informed with current significant mathematical events and breakthroughs in different areas of mathematical sciences. This section will be published in Arabic as this news is always published in English online and hence rarely does a KAU math student read such news. We will mainly use the following resources for the news: the American Mathematical Society (<http://www.ams.org/>), the Mathematical Association of America (<http://www.maa.org/>), the Society for Industrial and Applied Mathematics (<http://www.siam.org/>), and Science Daily (<http://www.sciencedaily.com/>) and other press releases published in research institutes. (see attachment 9)

In addition, we may write another section for the past mathematical events happened in a specified month, according to the month of publication of the journal issue. We will benefit from two resources: <http://www.ams.org/ams/thismathmonth-dec.html> and (<http://mathdl.maa.org/convergence/1/>). This column will be illustrated with pictures and figures, as appropriate to the event.

- 6) **Problems:** here we introduce two challenging problems from any area of mathematics, one at the lower and the second at the upper undergraduate level. We leave their solutions for the readers. The right clear-and-well-written solution will be published with the student's name, for each problem.
- 7) **Mathematician's Quote:** A small box highlighting a quote said by a mathematician.
- 8) **Suggested Writing:** here we suggest a topic, whether technical or otherwise, and invite readers to search and write an expository article about it. The best one will be published in the upcoming issue by the student's name. This activity is bi-monthly to give interested readers enough time to read and write.
- 9) **Book Reviews:** at least two books, available in the Central Library, are reviewed. Again, any reader can write a review. We want to encourage students to benefit from the available

mathematical literature. We may also re-publish reviews of other valuable books, not necessarily available in the library (see attachment 1).

- 10) **Interview:** An interview with a math professor shedding light on matters math students are willing to know.
- 11) **Report:** this will not be necessarily monthly, and, will cover an issue in KAU with great concern to KAU mathematical community. It simply addresses a phenomenon with its facts and statistics and possible treatments. The process of preparing such a report may require a group of students working together.
- 12) **Supplement:** this activity can be tri-monthly. It is a file attached to the journal providing extensive information about any interesting topic in mathematics or science, normally non-technical.

## II. Students' Work

Math undergraduates are primarily invited to participate and submit their work in this journal. Submission of members of math faculty is highly appreciated, and participation of math-related undergraduates (e.g. physics and statistics) is strongly encouraged.

By saying student's work I mean memos, lessons, expositions, solved problems, lecture notes, or any other kind of technical mathematical writing, which is a very useful and rewarding activity. As you see, there are quite variant kinds of expository mathematical writing in which undergraduates can be engaged. They can also submit their excellent assignments (of course, after it has been handed in or discussed with the instructor) for the benefit of other students. We mean here to allow an excellent chance for students to practice mathematical writing and showcasing their work to the mathematical community. This is an essential goal of establishing this magazine and we will encourage all students, especially the ambitious and talented, to write expositions (see attachment 7).

On the other hand, we will also encourage students to engage themselves in non-technical writing, through writing articles demonstrating the interplay between mathematics and natural sciences, how mathematics is used in solving today's problems, or articles about philosophy of mathematics, history of mathematics, development of mathematical thought, etc. other examples include a student's own experiment in studying a particular course and her suggestions for improvement.

## III Press Reading

There is a number of high-level mathematics journals and websites that hardly do KAU mathematics students know about. At the same time they are excellent resources for undergraduates for enriching their knowledge and further exploring the world of mathematics. We

03/10/2008

aim here to introduce Arabic written abstracts of chosen papers published in these journals and attach their links to encourage students to read them. We will also republish other topics and expositions, with consideration to the availability of permission of republishing for non-commercial purposes.

To clarify the idea, let me list some of the most excellent resources, to list a few:

### **Publications of AMS:**

Journals: the Notices journal (<http://www.ams.org/notices/200801/>) and the Bulletin journal (<http://www.ams.org/journals/bull/>).

Online Magazines: These are monthly magazines to promote awareness of mathematics:

Math in the Media: <http://www.ams.org/mathmedia/>

Feature Column: monthly essays on mathematical topics:

<http://www.ams.org/featurecolumn/>

MIT open course ware: free mathematics and science courses:

<http://ocw.mit.edu/OcwWeb/Mathematics/>

Math Gateway: <http://mathgateway.maa.org/>

Plus Magazine: <http://plus.maths.org/>

Journal of online mathematics and its applications: <http://mathdl.maa.org/mathDL/4/>

### **Distribution**

This is something to be discussed with the contributing group as we have here to listen to different points of view. However, I have two possible choices:

- 1- A definite space of the journal is specialized for advertisements with fees. These fees go for printing and copying the journal in a press house. With this, we would be able to distribute many copies of the journal to math undergraduates free of charge.
- 2- We produce the journal independently and leave a copy in the library located in our college and every student can buy a copy of it from the library.

Another easier and better way to distribute the journal is to make it electronic, and then we send every monthly issue to the e-mails of students and members of faculty.

### **Submission Guidelines:**

Submissions should be sent by e-mail to the editor-in-chief. The deadlines for sending submissions will be announced in each issue of the journal for the coming and upcoming issues. The e-mail message should contain the following items:

- An attached file of the paper in PDF or Microsoft Word format.
- The title of the paper and its description, e.g. exposition, lecture notes ...etc.
- Keywords and subject classification.

03/10/2008

- A brief abstract of the paper.
- The name and e-mail address of the author.

In order to produce a well-organized undergraduate-level mathematics journal we need to guide the student who wants to submit a paper on different aspects to consider when preparing her paper. For this reason we set general guidelines for submission, as follows:

- Originality: submitted papers of any kind of mathematical writing (expositions, research, articles...) should be original; that is, it must be of the student's own work as long as it will be published by her name.
- Language: as we stated previously, we are intended to publish in both English and Arabic language. Thus, Arabic or English submissions are welcome.
- Writing: we may publish a brochure describing comprehensively different aspects (writing style, organizing, displaying formulas, etc) of different kinds of mathematical writing.
- Illustration: expository articles should be illustrated by images or figures. Other non-technical topics should at least be preceded by a suitable attractive image. For example, suppose we would like to publish a short article about Euler, then we will precede the article by a portrait of him.
- Co-Authorship, between a professor and a student or between students, is welcome and encouraged.
- References: list of references should be listed in the end of the paper submitted.

### **Policy, and Philosophy, and Ethical Guidelines:**

In addition to the guidelines, the journal must be committed to some policies to preserve mutual trust required for science and to achieve its ambitions. Hence, these policies must not be violated by writers, participants, and contributors. These policies include accuracy, credibility, impartiality, modernity, honesty, and scientism. The journal is committed to showcasing outstanding well-done mathematical work, in any section of the journal. In case we start establishing the journal, these policies and other ethical guidelines will be discussed with the editorial board.

### **Organization:**

In order to maintain this ambitious project, we should to be cooperative and to collectively work to achieve the continuity and outstanding performance of this journal. As previously made it clear, all KAU mathematical community will benefit.

03/10/2008

First, this journal needs a **director**- probably a mathematics professor. The director will supervise the work of the contributors, and, most importantly, she will also serve as a consultant in different matters that may face the contributing students while preparing the materials to be published. From the members of faculty we need at least three professors or instructors to form the **advisory panel**. The advisory panel will welcome any student wishing to publish her work to review it or provide advice. The rest of the contributors will be students. The journal needs an editor-in-chief, **associate editors**, and some other contributors to work in the production process, design, and advertising sales.

The **editor-in-chief** will have variable, vital tasks. She must be an able, outstanding student as her mission needs skills. She will be the medium between the director and the contributors. She will be responsible for answering students' questions, receiving submissions, reviewing under-publication work, supervising and preparing the essential section (news), managing the editorial activities. She should have good expertise in math journals and editing issues, and translating. In short, she will be the engineer of the journal.

## Future Vision

What is outlined in this paper is a proposed vision for the journal to be started as soon as possible. However, in case we proceed steadily we may add more activities for the journal like organizing invited talks and lectures, forming information exchange groups and publishing their fruits. All of these and others depend upon hard, continuous work and ambitious, optimistic math undergraduates.

## Initial Planning:

For launching the journal, some detailed discussions must take place and some minimum requirements must be prepared. For this, a group of interested students must be engaged in detailed planning and assigning responsibilities. We hope we start working on establishing the journal from the beginning of the second semester and launch the first issue by March 15, 2008.

The establishment of the journal may seem easy, but its permanent privileged performance would entirely depend on our choice to continue to collectively work for achieving its goals, with merely sincere intention. Only then, would we make a big difference.

## Attachments

To clarify my vision, I attach the following papers showing samples of typical entries to appear in the journal:

**Attachment 1:** A review for the book: *Letters to A Young Mathematician*, Notices of the AMS.

03/10/2008

**Attachment 2:** Mathematics and Cosmology, the rest of the article can be found at <http://www.ams.org/featurecolumn/archive/cosmology.html>

**Attachment 3:** Celestial Mechanics

**Attachment 4:** Sines & Cosines of the Times, *Math Horizons*, April 1995, p. 5.

**Attachment 5:** Two ways to prove the midpoint formula, a short article (in Arabic).

**Attachment 6:** An essay describing different aspects of mathematical writing aimed at undergraduate audience (in Arabic). This essay may appear in the first issue of the journal to guide students to write expositions in an acceptable way. Its references are two outstanding papers: Writing a Math Phase Two Paper, by Steven L. Kleiman, with the collaboration of Glenn P. Tesler, 1999 (<http://www-math.mit.edu/phase2/UJM/vol1/KLEIMA~1.PDF>) and Advice for Undergraduates on Special Aspects of Writing Mathematics, by Stephen Maurer ([http://www.swarthmore.edu/library/cornell/WRITE\\_PRIMUS.pdf](http://www.swarthmore.edu/library/cornell/WRITE_PRIMUS.pdf)).

**Attachment 7:** past mathematical events that happened in August translated into Arabic. The resource of these events may be viewed at: <http://ams.org/ams/thismathmonth-august.html>.

**Attachment 8:** the Notices issue of June/ July 2007 is also attached with this paper. Suffice it to say this journal is monthly read by 30,000 mathematicians worldwide. It is probably the original source that inspired me to think about this project, with its simple high-quality production and enriching material.

**Attachment 9:** Rensselaer Polytechnic Institute (2008, January 11). Physicists Uncover New Solution For Cosmic Collisions. *Science Daily*.

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