

Q et R...

Q. Qu'est ce que la Studec?
 R. C'est la comité d'étudiants de la SMC

Q. Qu'est ce qu'un nombre premier ?
 R. C'est un nombre entier ayant exactement 2 diviseurs.

Q. Qu'est ce que la SMC ?
 R. Société Mathématique du Canada

Q. Que fait la SMC?
 R. La SMC supporte le Congre Canadien des Etudiants en Mathématique (CCEM), la « Student Mathematical Communicator » (Ce bulletin) et plusieurs évènements régionaux pour étudiants en mathématique au Canada en plus d'autres projets.

SVP voir www.cms.math.ca/fr

Q. Que fait la SMC ?
 R. La SMC supporte la communauté mathématique canadienne et les mathématiciens canadiens par plusieurs initiatives qui vont de concours aux publications.

Q. Pourquoi existent les nombres entiers ?
 R1. Kronecker, « Dieu a crée les nombres entiers, le reste est l'œuvre de l'homme. »
 R2. Pour compter nous avons les entiers naturel (naturellement!) nous voulons former un groupe abélien additif.

Q. Qui sont les membres de la Studec ?
 R. Les étudiants canadiens en mathématique. Parmi autres nous avons des membres de la Terre-neuve de St. Jean, Montréal, Québec, Kingston, Ontario, Winnipeg, Manitoba et Colombie Britannique.

Q. Combien de nombres premiers y a-t-il entre 1 et x ?

R. Quand $x \rightarrow \infty$, $\frac{x}{\log x}$.

Ceci est le théorème des nombres premiers démontré par Hadamard et de la Vallée Poussin en 1896.

Q. Pourrai-je aider la Studec ?
 R. Bien sur !

Q. Comment pourrai-je aider la Studec ?
 R. Envoyer nous un email et nous vous le dirons ! chair-studec@cms.math.ca

Q. Pourquoi aider la Studec ?
 R. Parce que vous aimez la mathématique et vous voulez aider d'autres étudiants en mathématique au Canada comme vous-même.

Q. La Studec, résout-t-elle des devoirs en mathématique ?
 R. Non, mais nous pourrions vous indiquer la bonne voie.

Q. Pourquoi joindre la Studec ?
 R. Parmi autres raisons et sans aucun ordre particulier...

- Abonnement gratuit a la SMC
- Etre en contact avec les mathématiciens les plus doues du Canada
- Rencontrer nouveaux amis et collègues
- Travailler avec et représenter des étudiants en mathématique au Canada
- Voyager au réunions d'été et d'hiver de la SMC presque partout au Canada
- S'amuser aux réunions d'été et d'hiver de la SMC avec des amis et des membres de la Studec !

Nous espérons bien collaborer avec vous !

a+,
 Susan Cooper et Robert Juricevic
 Co-Chairs, Studec
 (Traduction par l'éditeur)

Q and A

Q. What is Studec?
 A. The CMS Student Committee

Q. What is a prime number?
 A. A natural number with precisely 2 divisors.

Q. What is the CMS?
 A. The Canadian Mathematical Society

Q. What does Studec do?
 A. We facilitate (financially and emotionally) the Canadian Undergraduate Mathematics Conference (CUMC), the *Student Mathematical Communicator* (this newsletter), and regional events across Canada, which involve students and mathematics. We are also involved in other projects. Check out www.cms.math.ca/Students

Q. What does the CMS do?
 A. The CMS supports the community of Canadian mathematics and Canadian mathematicians via many initiatives from math contests to publications. Check out www.cms.math.ca

Q. Why do the integers exist?
 A1. Kronecker, "God created the integers, all the rest is the work of man."
 A2. We have the counting numbers for free (or do we?), and we want an additive abelian group.

Q. Who are the members of Studec?
 A. Canadian mathematics students. We have members from St. John's Newfoundland, Montreal Quebec, Kingston Ontario, Winnipeg Manitoba, and Vancouver British Columbia, amongst others.

Q. How many prime numbers are there up to x?

A. As $x \rightarrow \infty$, $\frac{x}{\log x}$.

This is the Prime Number Theorem proven in 1896 by Hadamard and de la Vallée Poussin.

Q. Can I help Studec?
 A. Yes!

Q. How can I help Studec?
 A. Fire us an email and we will let you know! chair-studec@cms.math.ca

Q. Why would I help Studec?
 A. Because you love mathematics and you are interested in helping fellow students of mathematics across Canada.

Q. Does Studec solve homework problems?
 A. Nice try! However, we may point you in the right direction.

Q. What are the benefits of joining Studec?
 A. In no particular order...

- Free membership to the CMS
- Networking with Canada's best mathematicians
- Meeting new friends, colleagues
- Working with and representing mathematics students across Canada
- Travel to CMS summer and winter meetings across Canada
- Party at CMS summer and winter meetings with Studec and friends!

We look forward to working with you!

Cheers,
 Susan Cooper
 Robert Juricevic
 Co-Chairs, Studec

Bertrand's Postulate via Paul Erdős:

- (a) Show that the binomial coefficient $\binom{2n}{n}$ is an even integer for all positive integers n .
- (b) Use part (a) to show there is a prime number p between n and $2n$ (Bertrand's Postulate) for all integers $n \geq 2$.

Solution:

For part (a): See *Berkeley Problems in Mathematics* by Paulo Ney de Souza and Jorge-Nuno Silva, page 109, Problem 6.13.9 part 1.

For part (b): See *A Course in Number Theory, Second Edition*, by H. E. Rose, page 228-232.

Note on New Problem

ABC Conjecture: Let A, B, C be positive integers such that $A + B = C$, and

$\gcd(A, B, C) = 1$, and let $\varepsilon > 0$. Then there exists a constant $c = c(\varepsilon)$ such that

$$\max(|A|, |B|, |C|) \leq c(\varepsilon) \left(\prod_{p|ABC} p \right)^{1+\varepsilon}$$

The *ABC Conjecture* is an unsolved problem.

If true, it has astonishing consequences. The best result in the direction of proving it is due to C. L. Stewart and K. Yu involving the theory of linear forms in logarithms.

New Problem:

Let $n = p_1^{\alpha_1} \cdots p_n^{\alpha_n}$ be an integer greater than or equal to 1, where $p_i, i = 1, \dots, n$ are distinct prime numbers and α_i is the power of p_i in n . The radical of n is defined as $\text{rad}(n) = p_1 \cdots p_n$. Suppose that a and b are odd positive integers such that for every natural number k

$$\text{rad}(a^k - 2) = \text{rad}(b^k - 2)$$

Assuming the *ABC Conjecture*, prove that

$$a = b.$$

This problem is due to H. Kisilevsky, Concordia University, Montreal.

The *Student Mathematical Communicator* is produced by the

CMS Student Committee

It is distributed to all math departments in Canada. Please address correspondence to

student-editor@cms.math.ca

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CUMC Birthday Event

This year is the 10th anniversary of the Canadian Undergraduate Mathematics Conference (CUMC). York University will be hosting the event between May 27th and June 1st, 2003.

This is a great opportunity to meet leading mathematicians, attend great talks and social events, and interact with students from other universities.

For more information please contact Joy at cumc@cms.math.ca.

CMS Summer Meeting

Following the success of the winter meeting, the CMS summer meeting will be held at the University of Alberta, Edmonton, June 14th to 16th 2003.

Want to find out what Canadian mathematicians do for a living? Learn more about our Student Committee?

CHECK OUT:

<http://www.cms.math.ca/Events/summer03>

Need money to get there? Email

gradtravel-s03@cms.math.ca

The deadline for requests is May 1st 2003. (You could also maybe ask your math department for support!)

CMS Bits and Bites

- Six Students earned top honors in the **Seventh Canadian Open Mathematics Challenge Champions** held on February 12th, 2003.
- Two Canadian mathematicians: Joel Feldman (UBC), and Jingyi Chen (UBC) were honored on January 30, 2003 for **outstanding research achievements**.
- The **44th International Mathematical Olympiad (IMO)** is to be held in Tokyo, Japan between July 7th and 19th, 2003. Good luck for the Canadian team! For more details please check

<http://www.cms.math.ca/MediaReleases/2002/imo2002res>

<http://imo.math.ca>

For more details about the News Cuts and for more news please check

<http://www.cms.math.ca/MediaReleases>

In this issue...

What is the CMS? the Stude? What do they actually do? Ever wondered why the integers exist? Find answers to these questions and much more both in English and French in pages 2 and 3. Learn about the ABC conjecture and try to apply it on page 4.