

Learning Curve

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H18-19

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EXCELLENCE IN EDUCATION



Passion for sports wins girl Nilai UC award

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CONTESTS



More than meets the eye

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MY SCHOOLDAYS

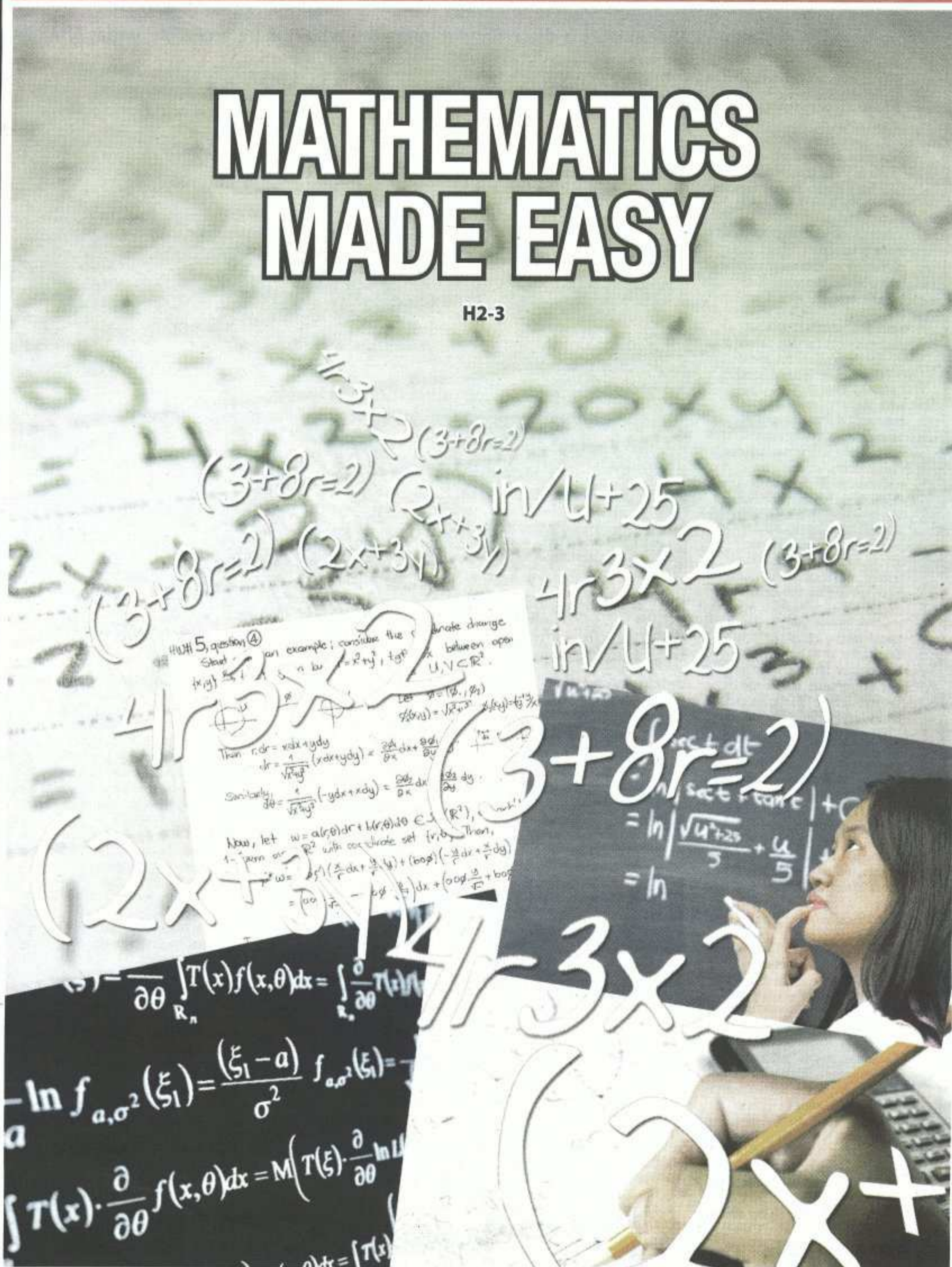


'A love for M&M'

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MATHEMATICS MADE EASY

H2-3



Mathematics? No problem

A professor of Mathematics is determined to make the subject more accessible, writes SHARIFAH ARFAH

IF there is a subject that students the world over dislike, it is likely to be Mathematics.

The love-hate relationship young people have with the lesson is clear from the number of "I Hate Maths pages" created on Facebook — there are at least 30.

One particular page received more than 8,000 "likes" garnering comments that range from "Maths is very difficult, I really hate it!" and "I hate Maths.... I wanna kill those authors..." to "Maths is just a gimmick that certain people use to call themselves intelligent".

Professor of Mathematics Chandra Kant Raju sympathises with these students and believes they need not feel that Mathematics is a burden.

The Indian national blames the students' struggle to understand the subject on the belief that "Mathematics (and Science) are universal but (this) originated from the West".

"This idea is absurd. If Maths and Science are indeed universal, they would have sprung up the same everywhere," says Raju, who recently presented the paper Decolonising Math and Science Education at the International Conference on Decolonising our Universities organised by Universiti Sains Malaysia (USM) and Citizens International.

Raju, who has taught Mathematics for the last 30 years, traces the problem back to the Western philosophy of Mathematics which went through reinterpretation and falsification of history to suit the needs of Westerners.

"Western society was dominated by the church for more than 1,000 years and all knowledge had to be made theologically correct," says the visiting professor at USM.

For example, the Greeks believed that Mathematics incorporated eternal truths, angering the Christian priests at the time.

When the philosophy was eventually accepted during the Crusades, it was "reinterpreted" as soulless to align with the philosophy of the post-crusade Christian theology of reason.

History was also falsified — knowledge originating from the Arabs was attributed to the Greeks.

For example, in Toledo, Spain in the 12th century, the church had financed the mass translations of Arabic books and credited the Greeks with



Participants concentrating hard at the International Mathematical Olympiad. Despite its importance, Maths is disliked, particularly by youngsters



Chandra Kant Raju

discovering the knowledge.

Raju's research also showed that Calculus has its origins in India and was used for calculating trigonometric values.

While the Europeans used it for navigation, the Indians used it to determine the size of the Earth, 1,000 years earlier than the Europeans.

"The Europeans used it but didn't truly understand it," says Raju, further explaining his points.

Raju is aware that his views are controversial because the current Mathematics curriculum rooted in Western philosophy is widely accepted.

Yet the Telesio-Galilei Academy of Science Award he won in 2010 for pointing out and correcting a mistake in the theory of relativity ($E=mc^2$) made famous by physicist Albert Einstein proves that Raju "knows his stuff".

"It depends on who you're talking to. If whatever I say is false, prove it. I'm willing to have a public debate on this. Anything good should be accepted but we need to critically examine what we learn," says the computer scientist and physicist.

Raju is always on the quest for making Mathematics more accessible.

Three years ago he devised a course, Calculus Without Limits, which was first implemented in 2009 at the Central University of Tibetan Studies in Sarnath, India.

He chose Calculus — the Mathematics that calculate the rate of change — as it is

considered "the line dividing men and boys" in Mathematics.

The five-day course attempts to make Calculus easier to understand by treating it as a practical solution instead of "a metaphysical subject".

Raju believes that the module also makes the application of Calculus in other subjects such as Physics simpler.

Last year, he tested it on four groups of USM students: those pursuing postgraduate Mathematics, undergraduate Pure Mathematics, undergraduate Applied Mathematics and undergraduate non-Mathematics programme (such as those who major in Media and Communications).

"The idea is that, by the end of the course, even non-Maths groups can do random problems from the Calculus tests," says Raju.

There was a marked improvement in students' results. All the groups achieved at least an 80 per cent pass rate in the final test.

Raju is happy with the results and views the module as his personal contribution towards

"decolonising" the subject.

The success has spurred him on to compile teaching and learning materials on the course into a textbook and teaching manual.

The book *Euclid & Jesus* — an explanation of the facts and fallacies of Western-imposed Mathematics in layman's terms — will be his 12th publication.

Raju's dream is to see the project being taught in educational institutions but it remains to be seen when this will happen.

One of the obstacles is that the public has little say in curriculum development.

"Parents and students, and even scientists and engineers, are rarely consulted on what sort of Maths to teach. Decisions on the Maths curriculum are left solely to 'experts'. But who are the experts? They were all trained in the Western module of Mathematics," he says.

"Only after they have 'unlearned' what they know will they accept the new method," he says.

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