Introducing Differential Calculus

Topics: Functions and Calculus

A "teaching for understanding" approach to differential calculus.

Year Group: 6th Year Level: Leaving Certificate Ordinary

Given that distance = t^3-t^2 (where t is time in seconds) calculate:



the average speed of the car from 0 to 4 s

The Task

- the average speed of the car from 4 to 8 s
- the average speed of the car from 1 to 7 s
- the average speed of the car from 2 to 6 s
- the average speed of the car from 3 to 5 s
- their best estimate of the actual speed at 4 s explain your reasoning.



Prior Knowledge & Posing the Task 7 minutes Students working or the problem 13 minutes



Summing up & Reflection 5 minutes

Reflecting on the Lesson

The group had three main lessons goals. **That** students will recognise that: a) The rate of change of a nonlinear function changes. b) The rate of change can be approximated using secants to the curve. c) The exact rate of change at a point is calculated by finding the slope of the tangent to the curve at that point.

It was felt that the first two goals were very well met but that not all the students achieved goal c) during this lesson. This was comfortably addressed in subsequent lessons and the teacher reported a noticeably greater understanding of calculus when exam style "Contexts and Applications" questions were encountered by this group of students.



Developed by Adrienne Cunningham (Scoil Ruain), Shane Russell (Comeragh College), Billy Walsh and Helena Walsh (Presentation SS, Fethard), with thanks to Enda Donnlly MDT and the students from Scoil Ruain, Co. Tipperary.

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Maths Counts 2017





Maynooth University, 3rd-4th March 2017