

## First Midterm – Information

DATE: Thursday, February 17, 1-2:15pm. B131 (in class)

WHAT'S ON THE TEST?

- All material covered in weeks 1-4 of the course, on assignments 1-4.
- All material covered in Sections 13.1, 13.3-4, 14.1-5 and the first part of 14.6 (finding tangent planes).
- You should be able to state the important definitions and theorems.
- You should be able to solve the following types of problems (not an extensive list!):
  - Problems related to vector operations, finding the derivative of a vector valued function
  - Problems related to velocity, speed and acceleration
  - Problems related to arc length, arc length parametrization, unit tangent vector and curvature.
  - Finding the domain/range of functions of several variables, describing regions in higher dimension (interior/exterior/boundary points, closed/open/unbounded/bounded sets)
  - Problems related to level curves of functions
  - Limits for functions of several variables, proving the non-existence of the limit by the two-path test
  - Problems related to continuous functions of several variables
  - Finding first and higher order partial derivatives, applying various versions of the chain rule, implicit differentiation.
  - Finding directional derivatives, gradient vector of a function, directions of max, min and zero descent.
  - Finding tangents to level curves and various types of surfaces.