Vv255 Applied Calculus III

Recitation II

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Summer Term 2015

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Multivariable calculus

Multivariable calculus (A.K.A. multivariate calculus) is the extension of calculus in one variable to calculus in more than one variable.

- Pay attention to the figures on Page 2, Lecture 1

1. Different dimensions will lead to different meanings/interpretations of the same equation.
    - For example $x^2 + y^2 = 1$ in $\mathbb{R}^2$ and $\mathbb{R}^3$.
2. In 2D analytical geometry, the graph of an equation involving x and y is a curve in $\mathbb{R}^2$.
   In 3D analytical geometry, an equation in x, y, and z represents a surface in $\mathbb{R}^3$.
3. Distance formula in $\mathbb{R}^3$:
   $|P_1P_2| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$

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