

MA 229/MA 235 - Lecture 15

IISc

Recap

- Defined manifolds, submanifolds, manifolds-with-boundary.

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- Tangent spaces and pushforwards.
- Implicit, inverse, constant rank theorems. Regular values and Sard's theorem.
- Partitions-of-unity, Whitney's embedding.

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- A natural choice is the coordinate basis $\frac{\partial}{\partial x^i}$.

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- The hairy ball theorem implies that there is no smooth vector field on S^2 that is *nowhere* vanishing.

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