Topics for Exam 1

1. **Differentiable Paths and Paremetrized Curves**

    1.1 Differentiable paths

    1.2 Derivative of a path

    1.3 Parametrized curves

    1.4 Tangent lines to curves

    1.5 Linear approximations to paths

2. **Vectors in the Plane**

    2.1 Vector addition

    2.2 Scalar multiplication

    2.3 Dot product

    2.4 Euclidean norm

    2.5 Vector–parametric equation of a line

Relevant sections in the online class notes: Sections: 2.1, 2.2, 2.3, 3.1, 3.2, 4.1.

Relevant assignments: 1, 2, 3, 4, 5 and 6.

Important concepts: Parametrizations, differentiable path, tangents to curves, linear approximations to paths, vectors in the plane, vector addition, scalar multiplication, dot product, Euclidean norm, vector–parametric equation of a line.

Important skills:

- Know how to parametrize curves;

- know how to compute tangent lines to curves;

- know how to compute linear approximations to paths;

- know how to add vectors;

- know how to multiply vectors by scalars;

- know how to compute the dot product of two vectors;

- know how to compute the angle between vectors;

- know how to compute vector–parametric equations of straight lines.