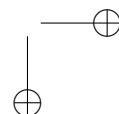
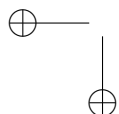


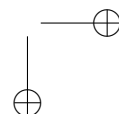
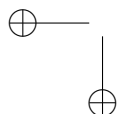
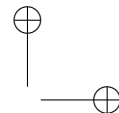
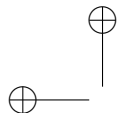
The Elements of Linear Algebra

Volume One: Livre des Lignes Droites

Theron J Hitchman

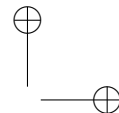
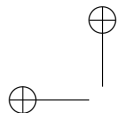
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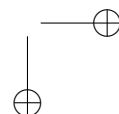
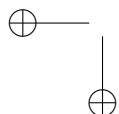


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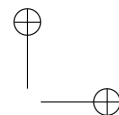
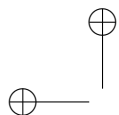
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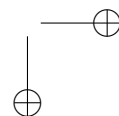
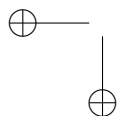
The Equation of a Line in the Plane

Outline

- points vs physics vectors vs math vectors
- the idea of \mathbb{R}^2
- sketching points and vectors in the plane
- vector algebra in \mathbb{R}^2
- lines in \mathbb{R}^2 as parametric objects: through the origin, and not
- sketching lines in \mathbb{R}^2
- lengths, angles, and the dot product in \mathbb{R}^2
- normal vector to a line in \mathbb{R}^2
- equation of a line, three methods: elimination, from two pts via similar triangles, from geometry of dot product
- families of parallel lines
- sketching a line from an equation
- the big theorem with duality



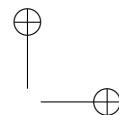
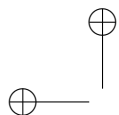
THE EQUATION OF A LINE IN THE PLANE



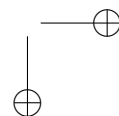
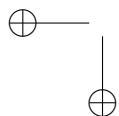
The Equations of a Line in Space

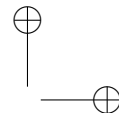
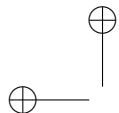
Outline

- points, vectors in space
- \mathbb{R}^3
- vector algebra
- planes in \mathbb{R}^3 parametrically: through the origin, not
- dot product in \mathbb{R}^3
- normal vector to a plane
- the equation of a plane: by elimination, by dot product
- families of parallel planes
- sketching from an equation
- big theorem with duality for planes
- LINES in \mathbb{R}^3 as intersection of two planes

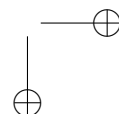
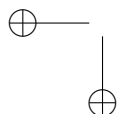


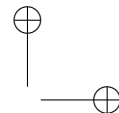
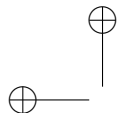
THE EQUATIONS OF A LINE IN SPACE



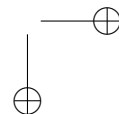
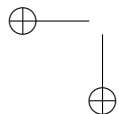


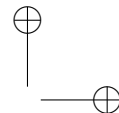
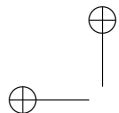
Systems of Lines in the Plane



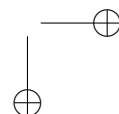
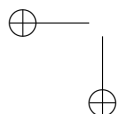


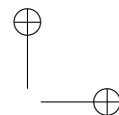
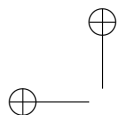
SYSTEMS OF LINES IN THE PLANE



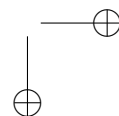
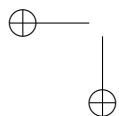


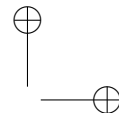
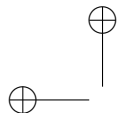
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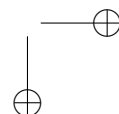
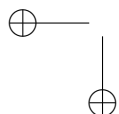


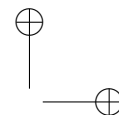
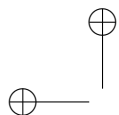
SYSTEMS OF PLANES IN SPACE



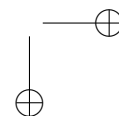
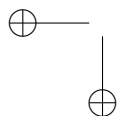


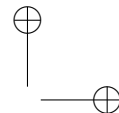
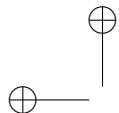
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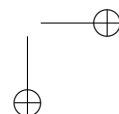
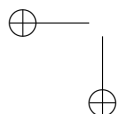


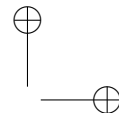
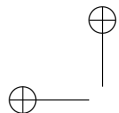
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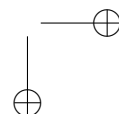
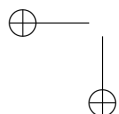


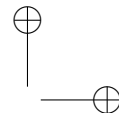
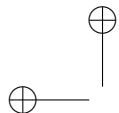
Approximate Solutions to Unsolvable Systems





APPROXIMATE SOLUTIONS TO UNSOLVABLE SYSTEMS





Matrices as Transformations

