MATH60005/70005: Optimisation (Autumn 24-25)

Exam checklist

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Please read: the list below is to give you a general overview of the module content. The examinable content is the intersection between what is in the lecture notes and what was discussed during the lectures.The checklist of every week provides a more detailed breakdown of the content that was discussed.

Learning Outcome	Check
Stationary points and classification, existence of global/local optimisers	
Quadratic functions	
Linear least squares problems (including RLS and applications)	
Gradient descent (including convergence)	
Convex sets and functions	
First and second order characterisation of convex functions	
Epigraph characterisation of convex functions	
Orthogonal projection operator	
Projected gradient method	
KKT conditions for linearly constrained problems	
KKT conditions for nonlinear convex problems	
Primal and dual formulations	
Weak and strong duality conditions	
Pontryagin conditions for optimal control problems (mastery)