# MATH60005/70005: Optimization (Autumn 22-23)

## Week 2: Learning Outcomes Checklist

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The idea of this checklist is to help you to self-evaluate your progress and understanding of the subject, and to give you some guidance on where to focus. If you can tick all the boxes it means you're doing alright, otherwise you need to study a bit more, grab a book, watch the videos, or seek help from classmates, or the lecturer. Try to fill as many gaps as quickly as possible.

And remember to make an attempt to solve the problem sheet before our live session!

| Learning Outcome | Check |
|---|---|
| I understand the difference between global and local maximum (minimum). | |
| I understand the difference between strict and non-strict optima. | |
| I know how to compute stationary points. | |
| I know the definition of a positive definite matrix. | |
| I understand the relation between positive definiteness (and variants) and eigenvalues of a matrix. | |
| I know 3 different ways to check whether a matrix is positive definite. | |
| I understand $\nabla f(\mathbf{x}) = 0$ is necessary but not enough for optimality, and that I need to check a second-order condition on the Hessian. | |
| I can see the difference between a necessary and a sufficient optimality condition. | |
| I understand the difference between local and global optimality conditions. | |
| I understand global optimality conditions for quadratic functions. | |