MAT B43: REMARKS ON FINAL EXAM

The final exam is cumulative, i.e. you should be comfortable with all material taught in the course. Unless otherwise specified, you may refer to any theorem proved in lecture, *without* re-proving it on the exam. However, questions on the exam may ask you to prove theorems from lecture.

The topics below are the ones we have covered since the midterm; most of the final will concentrate on these. However, topics from before the midterm are also fair game.

(1) Sequences and series: convergence and divergence, geometric series, harmonic series, the monotone convergence theorem, the integral test, the ratio and root tests, absolute convergence, alternating series.

(2) Bolzano-Weierstrass, the monotone subsequence theorem, the Cauchy criterion. **You will be asked to prove these on the exam.**

(3) Metric spaces; definition, properties. You should be comfortable with the examples we discussed, and you should be able to prove that a given example is / isn't a metric space.

(4) Cauchy-Schwarz, Hölder's inequality. **You will be asked to prove these on the exam.**

(5) Neighbourhoods, limit points. Open sets, closed sets. A set is open iff its complement is closed. Unions and intersections of open and closed sets. The Cantor set.