Topics for Test 2

Convergence tests for series.

Besides the standard convergence tests like comparison and limit comparison and integral test you should know the ratio test and the root test.

Alternating series, absolute and conditional convergence

You have to know the definition of what it means for a series to be alternating and convergent. You also have to know the estimate on the difference between the limit and the n-th partial sum.

Power series:

You have to know the definition of radius of convergence and you have to able to compute it in simple cases. Further you have to be able to compute the interval of convergence in simple cases. Differentiation and integration of power series and its uses for summing power series.

Taylor series and Taylor's theorem:

You have to know the definitions of the n-th Taylor polynomial, the Taylor series and Taylor's theorem including the remainder and you should be able to compute all of this for simple examples. Likewise, you should be able to compute approximate values of functions, i.e., for a given accuracy you should determine the degree of the Taylor polynomial you have to use in order to compute this value. You should also remember the Taylor series of functions like $\sin(x), \cos(x), e^x, \ln(1+x)$.

Vectors

You should be able to work with vectors, add them, multiply them by scalars and understand these processes graphically. You should be able to compute the dot product and the vector product. You should also understand lines and planes and solve simple distance problems.