Expansions - Check your knowledge

□ Do you know what a power series is?

□ Do you know what it means for a series to converge or diverge?

□ Do you know how to decide whether a power series converges or diverges?

□ How does one apply the ratio test?

□ Do you know how to find the Taylor series of an analytic function?

□ Can you write down the Maclaurin series of e^x, $\log(1+x)$, $(1+x)^{-1}$, $\sin(x)$ and $\cos(x)$? Do you know what their radii of convergence are?

□ Do you know how to find a power series solution to a differential equation?

□ What is a Sturm-Liouville problem? When is it regular?

□ What is an eigenvalue of a Sturm-Liouville problem? What is an eigenfunction?

□ What does it mean for two functions to be orthogonal? What is a weight function?

□ How do you expand a function on an orthonormal basis? What should you do if the basis is not orthonormal, but simply orthogonal?

□ What is a generalized Fourier series?

□ What is a trigonometric series?