MVE 290/030 THEORY LIST

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(1) Proof of pointwise convergence of Fourier series for continuous functions (Theorem 2.1 of Folland).
(2) Proof of the formula for the relationship between the Fourier coefficients for a function and its derivative (Theorem 2.2 of Folland).
(3) Proof of Theorem 7.3 in Folland.
(4) The Fourier inversion formula.
(5) Proof of Plancharel's Theorem.
(6) Proof of the Sampling Theorem.
(7) Proof of Theorem 3.4.
(8) Proof of Theorem 3.8 on the best approximation.
(9) Proof of Theorem 3.9 (a) and (b).
(10) Proof of the Generating Function for $J_n(x)$, formula (5.20) in Folland.
(11) Proof of the orthogonality of the Hermite polynomials (this is part of the proof of Theorem 6.11 in Folland).
(12) Proof of Theorem 6.13, that is to derive the generating formula for the Hermite polynomials (6.35).

1. Comments and suggestions

Any proof, as long as it is correct, will be accepted. Please take all of the above literally. For example, Item 4, one just needs to provide the formula. No proof necessary. Item 5, one needs to know the statement of Plancharel's Theorem and provide the proof of Parseval's formula, as for example given in the few lines of equations at the bottom of p. 221 in Folland. For the items which say "proof of X", the statement of what is to be proven shall be given, and the task at hand shall be to prove the statement.