The 'spectral side' of the Arthur-Selberg trace formula for a noncompact reductive group involves certain distributions arising from Eisenstein series. These distributions can be expressed as logarithmic derivatives of automorphic L-functions, which may be rewritten as sums of zeroes of L-functions. This suggests studying the distribution of zeroes of L-functions as distributions occurring in the trace formula. I will describe this method and its applications in the simplest case, which is GL(2). (Received July 01, 2015)