



SPECIAL VALUES OF DIRICHLET L -FUNCTIONS

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Let χ be a Dirichlet character with conductor Q . Though the general case presents no additional difficulties, for ease of exposition, I will assume that $\chi(-1) = 1$. Let $L(s, \chi)$ be the Dirichlet L -function associated to χ . What can we say about the \mathbb{Q} -dimension $\delta_\chi(a)$ of the space generated by the set $\{\chi(1), \dots, \chi(Q-1), L(3, \chi), \dots, L(a, \chi)\}$ where a runs through odd values? This question is the focus of my current research. In fact, I prove the following:

Theorem. *For each $\epsilon > 0$ there is an $A(\epsilon)$ such that for $a > A(\epsilon)$*

$$\delta_\chi(a) \geq \frac{1 - \epsilon}{Q + \log(2)} \log \left(\frac{a}{Q} \right).$$

In my talk I will show how one can arrive at such results using a criterion for linear independence and a suitably chosen auxiliary function.