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Powerful Numbers, Elliptic Curves and other Keywords

In a series of papers, Erdos posed numerous problems about powerful numbers, and more generally, k-full numbers. We will discuss two of these problems that can be solved by exploiting the group structure of elliptic curves defined over the rational numbers, the first of which being related to work of J.-M. de Koninck, and the second concerning the existence of quadruples of coprime powerful numbers in arithmetic progression. In particular, our computations suggest that a new example, which involves integers having 110 digits, is the smallest such quadruple. This is joint work with Michael Bennett.