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Sarah S. King* (sarah.schulz@louisville.edu), Louisville, KY 40202. *Extremal Points and Positive Solutions of a Fourth Order Three Point Boundary Value Problem.*

Extremal points for the fourth order boundary value problem $u^{(4)} + q(t)u = 0$, $0 \leq t \leq 1$, with three point boundary conditions $u(0) = u'(p) = u''(b) = u'''(b) = 0$ where $1 - \frac{\sqrt{3}}{3} \leq p \leq b \leq 1$ are classified. These results are applied to show the existence of a positive solution to the nonlinear boundary value problem $u^{(4)} + f(t, u) = 0$, $0 \leq t \leq 1$, with similar boundary conditions. (Received August 09, 2013)