1051-34-118   **Matthew Rudd*** (`mrudd@uidaho.edu`), Department of Mathematics, University of Idaho, 300 Brink Hall, Moscow, ID 83844. *Positive symmetric solutions of singular semipositone boundary value problems.*

We use the method of upper and lower solutions to prove that the singular BVP

$$-u'' = f(u)u^{-\alpha} \quad \text{in} \quad (0,1), \quad u'(0) = 0 = u(1),$$

has a positive solution when $0 < \alpha < 1$ and $f : \mathbb{R} \to \mathbb{R}$ is an appropriate nonlinearity that is bounded below; in particular, f can satisfy the semipositone condition $f(0) < 0$. We obtain a positive subsolution (the main difficulty) by piecing together solutions of two auxiliary problems, one of which relies on a novel application of Schauder's Theorem. (Received August 20, 2009)

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