Janak R Joshi* (janakrajjoshi@my.unt.edu), 2301 West Prairie Street, Apt#2, Denton, TX 76201, and Joseph Iaia. Existence of Solutions for Semilinear Neumann problems with prescribed number of zeros on exterior domains.

In this paper we prove the existence of an infinite number of radial solutions of $\Delta u + K(r)f(u) = 0$ with Neumann-like boundary conditions on the exterior of the ball of radius $R$ centered at the origin in $\mathbb{R}^N$ such that $\lim_{r \to \infty} u(r) = 0$ with prescribed number of zeros where $f : \mathbb{R} \to \mathbb{R}$ is odd and there exists a $\beta > 0$ with $f < 0$ on $(0, \beta)$, $f > 0$ on $(\beta, \infty)$ with $f$ superlinear for large $u$, and $K(r) \sim r^{-\alpha}$ with $0 < \alpha < 2(N - 1)$. (Received September 08, 2017)