1112-49-182 **Dean A. Carlson*** (dac@ams.org), American Mathematical Society, Mathematical Reviews, 416 Fourth Street, Ann Arbor, MI 48103. *Property (D) and the Lavrentiev Phenomenon.*

In 1926 M.Lavrentiev gave an example of a free problem in the calculus of variations for which the infimum over the class of functions in $W^{1,1}[t_1, t_2]$ satisfying prescribed end point conditions was strictly less than the infimum over the dense subset of admissible functions in $W^{1,\infty}[t_1, t_2]$. After Lavrentiev's discovery L.Tonelli and B.Mania gave sufficient conditions under which this phenomenon does not arise. After these results, the study of the Lavrentiev phenomenon lay dormant until the 1980s when a series of papers by Ball and Mizel and by Clarke and Vinter gave a number of new examples for which the Lavrentiev phenomenon occurred. Also in 1979, T.S. Angell showed that the Lavrentiev phenomenon did not occur if the integrands satisfy a certain analytic property known as property (D). Since Angell's result there have been several papers that have discussed the nonoccurence of the Lavrentiev phenomenon for free problems in the calculus of variations. The purpose of this paper is two-fold. First to present a general approach to the proofs of these later papers which unifies the results, and second to show that the extra conditions imposed on the integrands insure property (D) holds with respect to the relevant sequence. (Received August 02, 2015)