1135-VU-2209 **Mike Krebs*** (`mkrebs@calstatela.edu`). *Is There a Topology on Q That Detects Continuous Extensions to R?*

Let Q be the set of rational numbers, and let R be the set of real numbers in the usual topology. Consider the function f from Q to Q where f(x) = 1 if x is greater than the square root of 2, and f(x) = 0 otherwise. With the usual topology on Q, we have that f is a continuous function. However, f does not extend to a continuous function from R to R. How awful! Can we remedy this situation by changing the topology on Q? In other words, does there exist a topology on Q so that a function from Q to Q is continuous if and only if it extends to a continuous function from R to R? In this talk, we answer that question. The solution uses only basic definitions and theorems that appear early in a first course in point-set topology, so this question can be used as a challenge problem or a portfolio problem for an introductory Topology class. One can generalize the question to subsets of R other than Q. We conclude the talk by formulating a conjecture as to precisely which subsets of R possess a topology of the desired form. (Received September 25, 2017)