

Section 14.2 Worksheet:

- a. What are the typical problems for limits and continuity in the univariate case? Give examples of functions f and points a for which
- $\lim_{x \rightarrow a} f(x)$ doesn't exist
 - $\lim_{x \rightarrow a} f(x)$ exists, but the function isn't continuous
 - $\lim_{x \rightarrow a} f(x)$ has limits and is continuous.
- b. How is the process of establishing limits different between univariate and multivariate functions?
- c. Where are rational multivariate functions continuous?
- d. Can the limit exist at a point but the function fail to be continuous there? Can the function be continuous at a point but the limit fail to exist at the point?
- e. How can contours help us to analyze limits and continuity in the bivariate case?
- f. Can one approach a point in the plane from two distinctly different directions, find the same limit, and conclude that the limit exists?