

NOTE. We can combine the results from Chapters 12 and 13 to conclude that if $f: [a, b] \rightarrow \mathbb{R}$ is continuous, then its image is a closed interval (it has a maximum and minimum, and it contains all intermediate points). However, if we replace \mathbb{R} with \mathbb{R}^n for $n \geq 2$, then there are many more possibilities, including some that are surprising. For example, in \mathbb{R}^2 the image can be the unit square $[0, 1] \times [0, 1]$.

Additional information about such examples (and further references) can be found in

[intro 2 top A - 13.pdf](#).