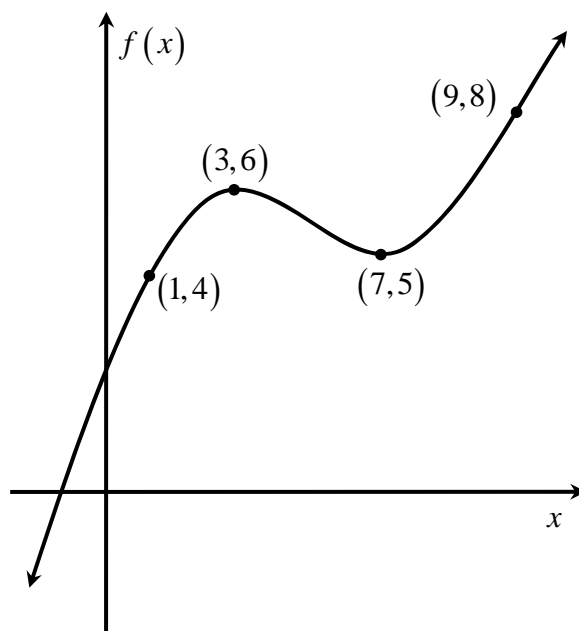


## Math 163A Class Drill 7: Relative and Absolute Extrema

The *Extreme Value Theorem* says that a function  $f$  that is continuous on a closed interval  $[a,b]$  will have both an absolute maximum and an absolute minimum on that interval. In this drill, you will investigate what can happen when the interval is not closed.

Here is the graph of a function  $f$ .



Fill in the table.

| Interval            | Relative Maxima in that interval | Relative Minima in that interval | Absolute Max in that interval | Absolute Min in that interval |
|---------------------|----------------------------------|----------------------------------|-------------------------------|-------------------------------|
| $[1,9]$             |                                  |                                  |                               |                               |
| $[1,9)$             |                                  |                                  |                               |                               |
| $(1,9]$             |                                  |                                  |                               |                               |
| $[3,9]$             |                                  |                                  |                               |                               |
| $(3,9)$             |                                  |                                  |                               |                               |
| $(-\infty, \infty)$ |                                  |                                  |                               |                               |