

# How **grid** Responds to Non-Finite Values

Paul Murrell

March 21, 2024

It is possible to include non-finite values, **NA**, **NaN**, **Inf**, and **-Inf**, in specifications of locations and sizes in **grid** functions. This document describes how **grid** responds to non-finite values in different cases.

## viewports

Non-finite values are not permitted in the location, size, or scales of a viewport. Viewport scales are checked when a viewport is created. It is very hard to be certain that locations and sizes are not non-finite when the viewport is created so this is only checked when the viewport is pushed. Non-finite values result in error messages.

## lines, segments, rectangles, text, points, circles

For all of these primitives, non-finite values for locations or sizes result in the corresponding primitive not being drawn. The following image provides a simple demonstration. Each primitive is drawn at seven x-locations, with the fourth location made non-finite (as indicated by a grey "NA").

|            |       |   |   |    |       |   |   |
|------------|-------|---|---|----|-------|---|---|
| segments   |       |   |   | NA |       |   |   |
|            |       |   |   | NA |       |   |   |
| text       | a     | b | c | NA | e     | a | b |
| lines      | _____ |   |   | NA | _____ |   |   |
| rectangles | ▣     | ▣ | ▣ | NA | ▣     | ▣ | ▣ |
| circles    | ○     | ○ | ○ | NA | ○     | ○ | ○ |
| points     | ○     | ○ | ○ | NA | ○     | ○ | ○ |

**lineTo**

A line segment is only drawn if the previous location and the new location are both not non-finite.

**polygon**

A non-finite value breaks the polygon into two separate polygons. NOTE that this break happens within the current polygon as specified by the `id` argument. All polygons with the same `id` receive the same `gp` settings.

**arrows**

An arrow head is only drawn if the first or last line segment is drawn.

The following image demonstrates the behaviour of these primitives where x- and y-locations are seven equally-spaced locations around the perimeter of a circle. In the top-left figure, all locations are not non-finite. In each of the other figures, two locations have been made non-finite (indicated in each case by grey text).

