Variations on Polygons and Stars in a Cycle.
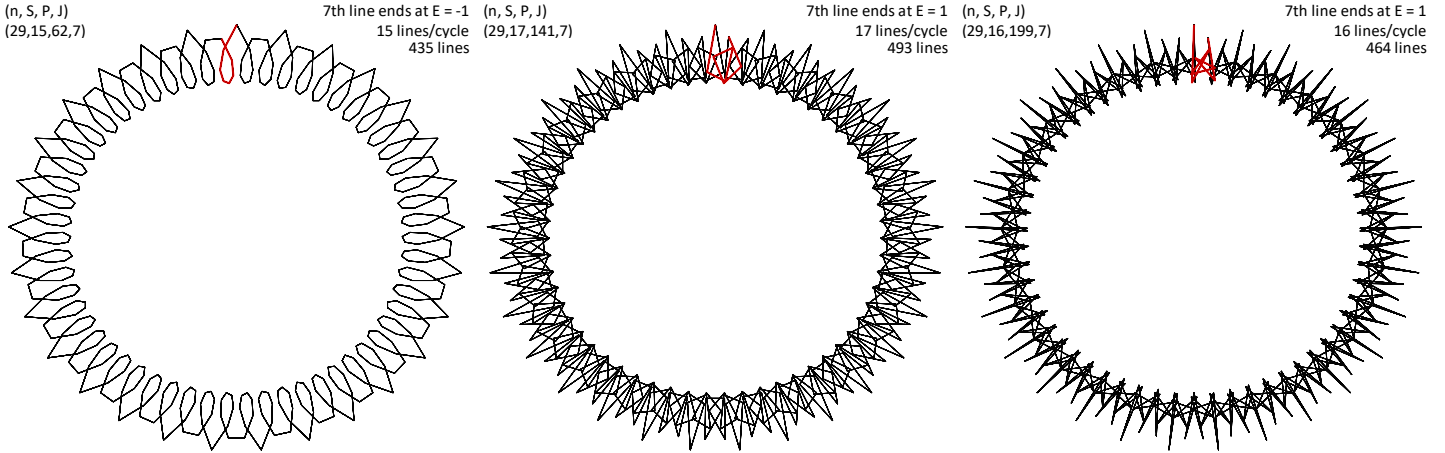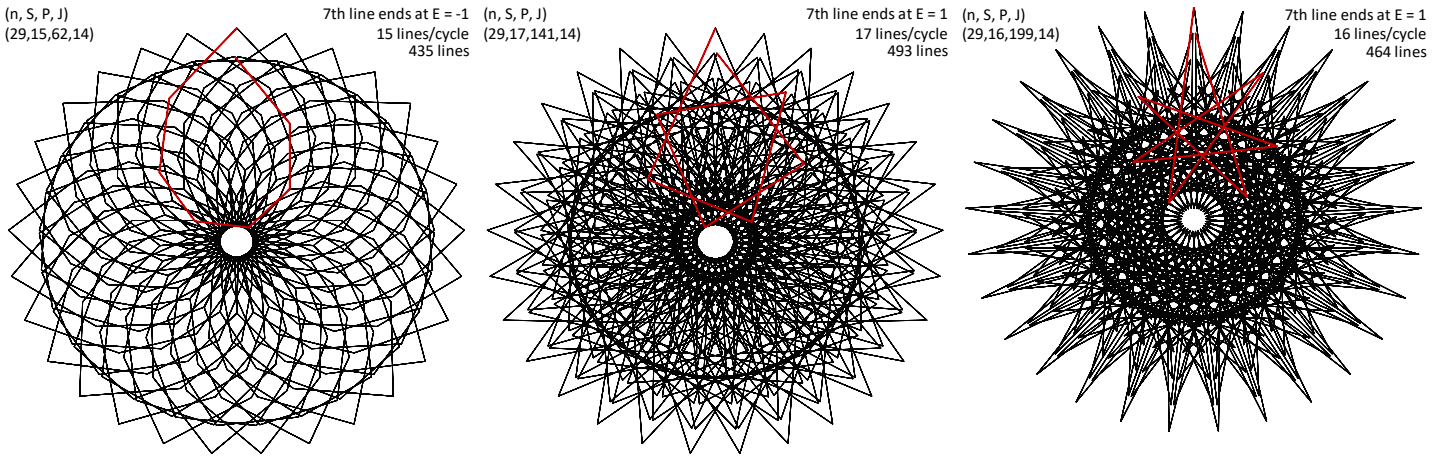
Polygons and Stars in a Cycle, E10.5, provides a strategy for increasing the number of similar sub-images in a cycle by altering **S** and **P** for fixed **n** and **J**. This section expands on that concept by focusing on *single-step* images of length 7, E8.5.1, using **n** = 29, the smallest **n** that allows two **J** < **n**/2 that are multiples of 7 using *The 7-Line Generator Function*. The top row shows **J** = 7 and middle shows **k** = 14, for **k** = 1 to 3 which shows rotating 7,1-, 7,2-, and 7,3-stars from left to right. Each image includes the first 7 lines in **red**. The final row increases **n** and focuses on 7,3-stars.

(n, S, P, J)   7th line ends at E = -1   (n, S, P, J)   7th line ends at E = 1   (n, S, P, J)   7th line ends at E = 1
(29,15,62,7)   15 lines/cycle   (29,17,141,7)   17 lines/cycle   (29,16,199,7)   16 lines/cycle
                     435 lines   493 lines   464 lines

Each image in the top row is drawn as *one-time around*. The first is counter-clockwise drawn with first cycle ending at vertex 28, the other two are clockwise drawn with first cycle ending at vertex 1. By contrast, each image in the second row is two-times around because the first cycle ends at vertex 27 on the left, and at 2 for middle and right.

(n, S, P, J)   7th line ends at E = -1   (n, S, P, J)   7th line ends at E = 1   (n, S, P, J)   7th line ends at E = 1
(29,15,62,14)   15 lines/cycle   (29,17,141,14)   17 lines/cycle   (29,16,199,14)   16 lines/cycle
                     435 lines   493 lines   464 lines

The final three images are 7,3-stars based on **n** = 43 for **J** = 7, 14, and 21. The patterns noted above continue here. The size of the 7,3-stars increase as **J** increases, and the first cycle ends at vertices 1, 2, and 3 from left to right.

(n, S, P, J)   7th line ends at E = 1   (n, S, P, J)   7th line ends at E = 1   (n, S, P, J)   7th line ends at E = 1
(43,16,295,7)   16 lines/cycle   (43,16,295,14)   16 lines/cycle   (43,16,295,21)   16 lines/cycle
                     688 lines   688 lines   688 lines