

## Section Exercises 12.2: Graphing Polar Functions

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In Exercises 1 – 4,

- Complete the table for each value of  $\theta$ .
- Carefully draw the graph on a polar grid.
- Check your graph using your calculator.

1.  $r = 3 \sin \theta$

| $\theta$ | 0 | $30^\circ$ | $60^\circ$ | $90^\circ$ | $120^\circ$ | $150^\circ$ | $180^\circ$ |
|----------|---|------------|------------|------------|-------------|-------------|-------------|
| $r$      |   |            |            |            |             |             |             |

2.  $r = \frac{1}{36} \theta$

| $\theta$ | 0 | $30^\circ$ | $60^\circ$ | $90^\circ$ | $120^\circ$ | $150^\circ$ | $180^\circ$ | $210^\circ$ | $240^\circ$ | $270^\circ$ | $300^\circ$ | $330^\circ$ | $360^\circ$ |
|----------|---|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| $r$      |   |            |            |            |             |             |             |             |             |             |             |             |             |

3.  $r = \frac{2}{1 + \cos \theta}$

| $\theta$ | $0^\circ$ | $45^\circ$ | $90^\circ$ | $135^\circ$ | $180^\circ$ | $225^\circ$ | $270^\circ$ | $315^\circ$ | $360^\circ$ |
|----------|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| $r$      |           |            |            |             |             |             |             |             |             |

4.  $r = 2 - 4 \cos \theta$

| $\theta$ | $0^\circ$ | $45^\circ$ | $90^\circ$ | $135^\circ$ | $180^\circ$ | $225^\circ$ | $270^\circ$ | $315^\circ$ | $360^\circ$ |
|----------|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| $r$      |           |            |            |             |             |             |             |             |             |

In Exercises 5 - 7, calculate all the points of intersection (Show your work).

5.  $r = 1 + \cos \theta$ ;  $r = 1 - \cos \theta$

6.  $r = 4 - 5 \sin \theta$ ;  $r = 3 \sin \theta$

7.  $r = \theta/2$ ;  $r = 5$