Lemniscate

The curve described in polar coordinates by $r^2 = \cos(2\theta)$ is called a *lemniscate*.

a) For what values of θ does there exist such a point (r, θ)?

b) For what values of θ is r at its minimum length?

c) For what values of θ is r at its maximum length?

d) Use the information you have gathered to sketch a rough graph of this curve.

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