

# Approximation d'un polygone régulier par une série de Fourier

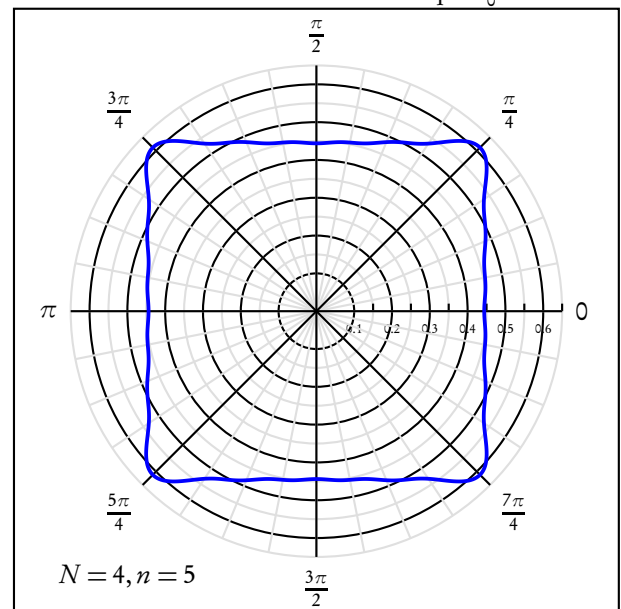
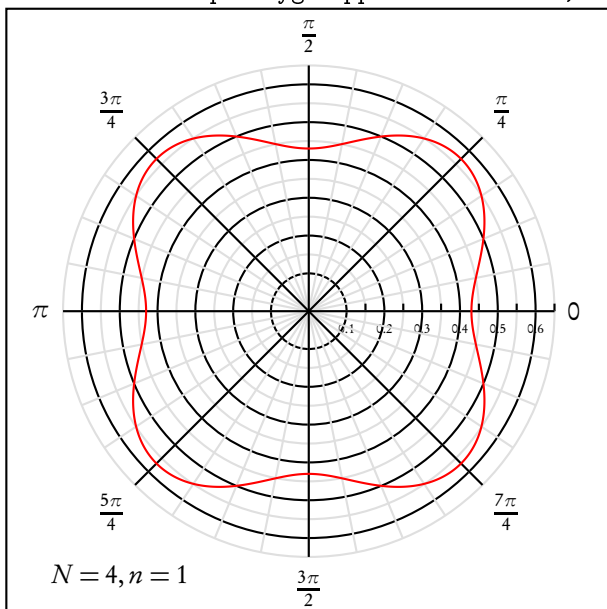
8 juillet 2014

L'équation polaire du polygone régulier de  $N$  côtés s'écrit :

$$\rho(\theta) = \frac{1}{2} + \frac{\sum_{n=1}^p \left( \int_{-\frac{\pi}{N}}^{\frac{\pi}{N}} \frac{\cos(Nnt)}{\cos(t)} dt \right) \cos(Nn\theta)}{\int_{-\frac{\pi}{N}}^{\frac{\pi}{N}} \frac{dt}{\cos(t)}}$$

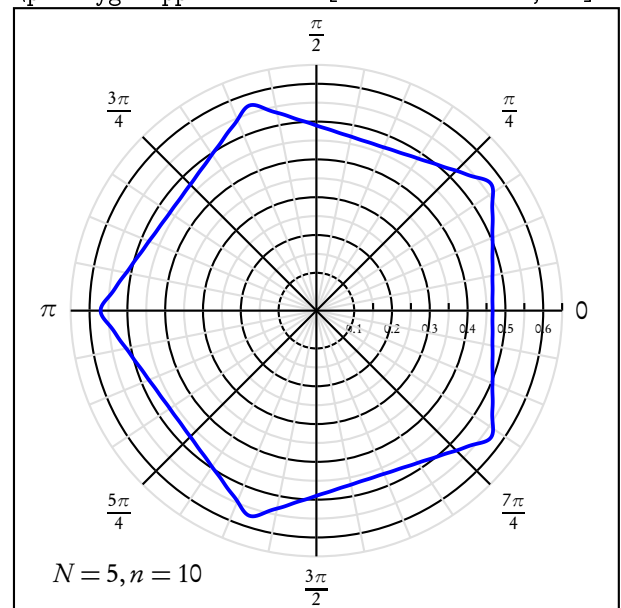
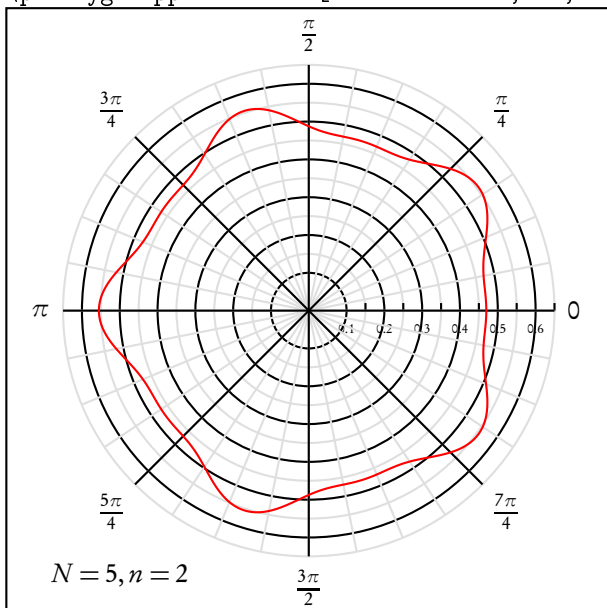
Paramètres :  $p$  = nombre de termes,  $N$  = nombre de côtés du polygone.

Dans la commande : `\psPolygonApproximation[N=4,n=1]`,  $n$  est le nombre de termes de la suite autre que  $a_0$ .



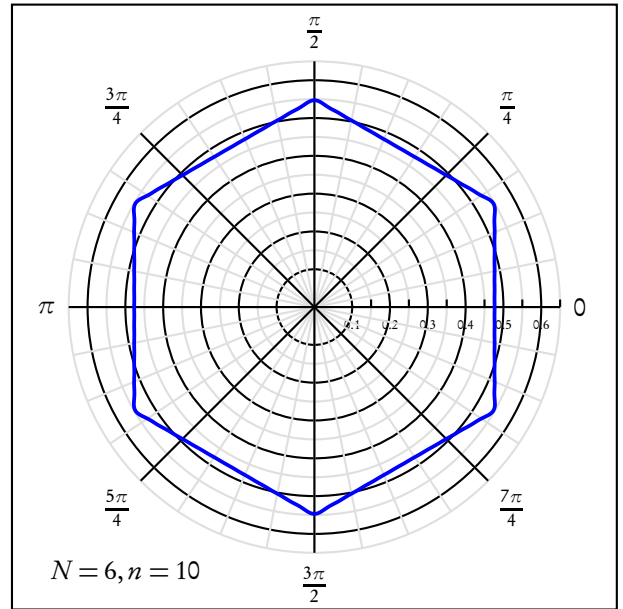
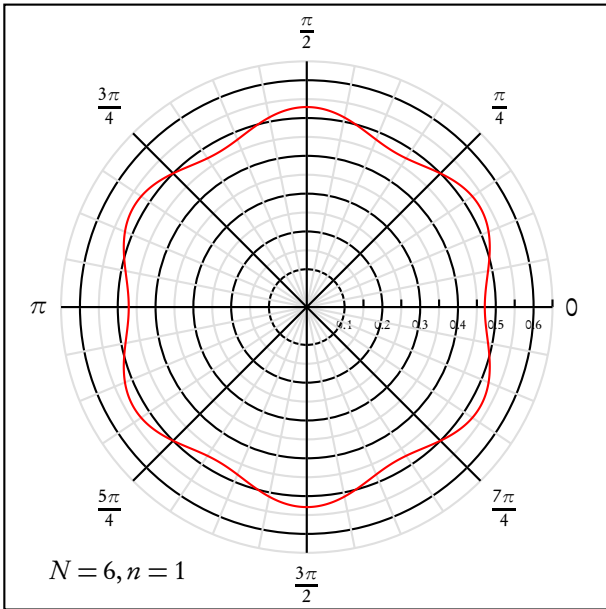
`\psPolygonApproximation[linecolor=red,N=4,n=1]`

`\psPolygonApproximation[linecolor=blue,n=5]`

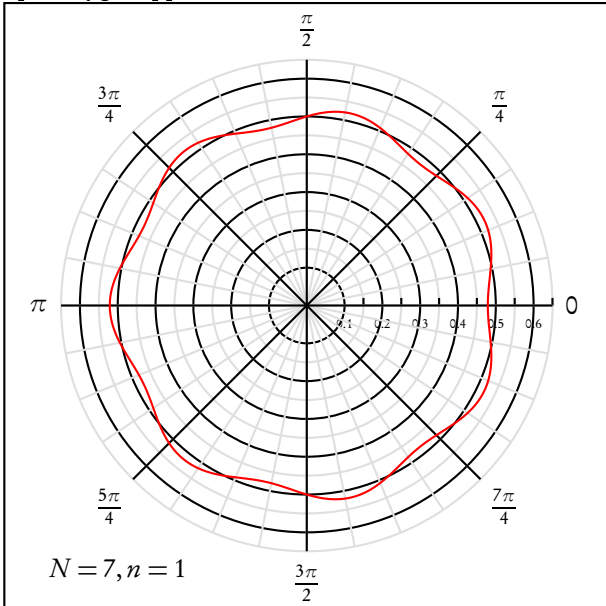


`\psPolygonApproximation[linecolor=red,N=5,n=2]`

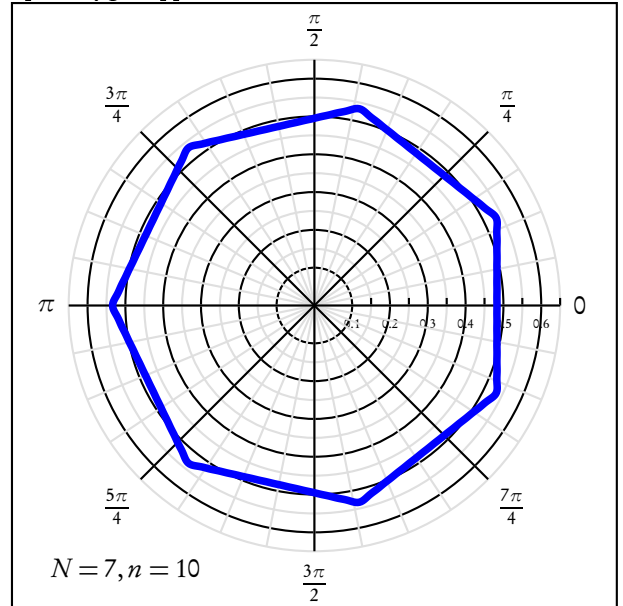
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`\psPolygonApproximation[linecolor=red,N=5,n=2]`



`\psPolygonApproximation[linecolor=blue,n=10,N=5]`



`\psPolygonApproximation[linecolor=red,N=5,n=2]`

`\psPolygonApproximation[linecolor=blue,n=10,N=5]`