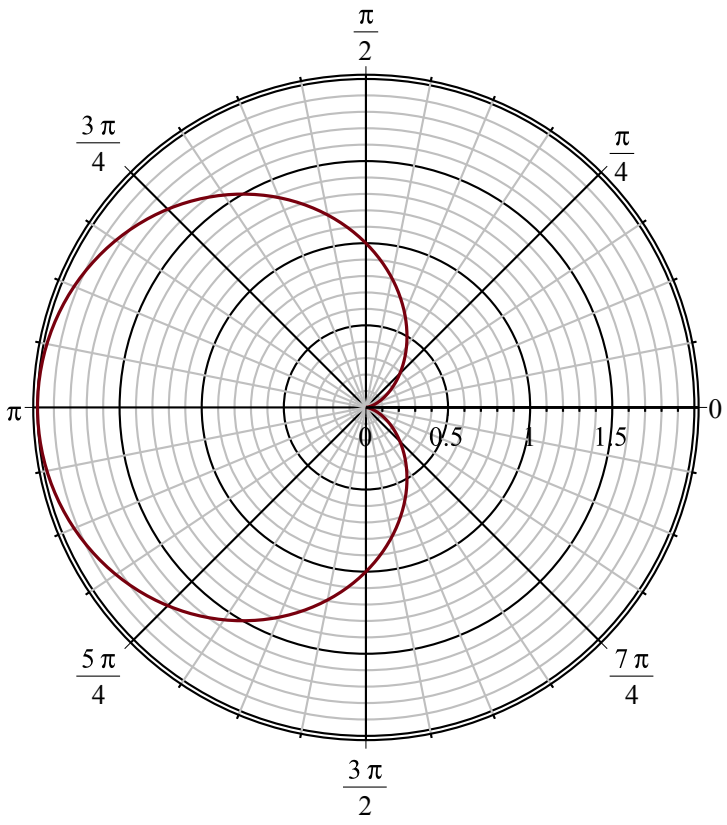
Vi starter på nytt
restart :

Vi lader inn kommandopakken
with(*plots*)
[*animate*, *animate3d*, *animatecurve*, *arrow*, *changecoords*, *complexplot*, *complexplot3d*, **(1)**
conformal, *conformal3d*, *contourplot*, *contourplot3d*, *coordplot*, *coordplot3d*, *densityplot*,
display, *dualaxisplot*, *fieldplot*, *fieldplot3d*, *gradplot*, *gradplot3d*, *implicitplot*, *implicitplot3d*,
inequal, *interactive*, *interactiveparams*, *intersectplot*, *listcontplot*, *listcontplot3d*,
listdensityplot, *listplot*, *listplot3d*, *loglogplot*, *logplot*, *matrixplot*, *multiple*, *odeplot*, *pareto*,
plotcompare, *pointplot*, *pointplot3d*, *polarplot*, *polygonplot*, *polygonplot3d*,
polyhedra_supported, *polyhedraplot*, *rootlocus*, *semilogplot*, *setcolors*, *setoptions*,
setoptions3d, *spacecurve*, *sparsematrixplot*, *surfdata*, *textplot*, *textplot3d*, *tubeplot*]

Polarkoordinater

Tegne grafen til r = 1 - cos θ
- vi kan bruke polarplot

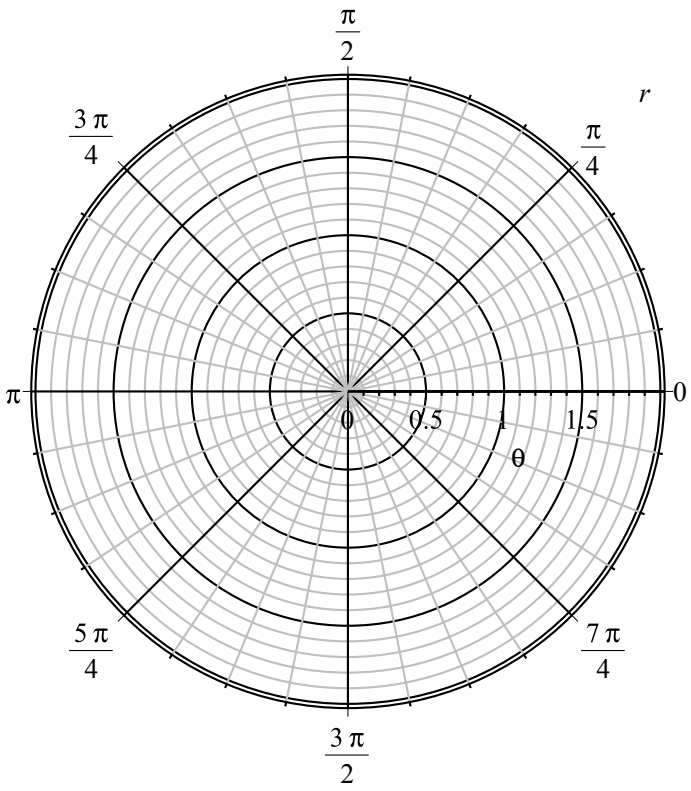
polarplot(1 − cos(theta), theta = 0 ..2 Pi)



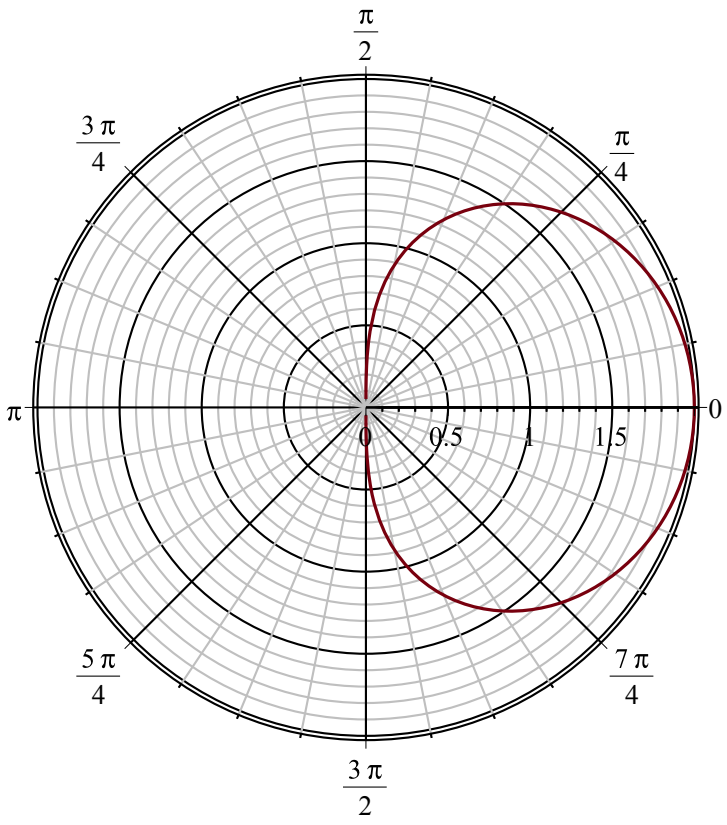
- vi kan lage en animasjon til å se hva skjer når θ øker (trykk på bildet og kjør)

animate(*polarplot*, [(1 − cos(theta), theta = 0 ..2 *n*)], *n* = 0 ..2 Pi)

$n = 0.$

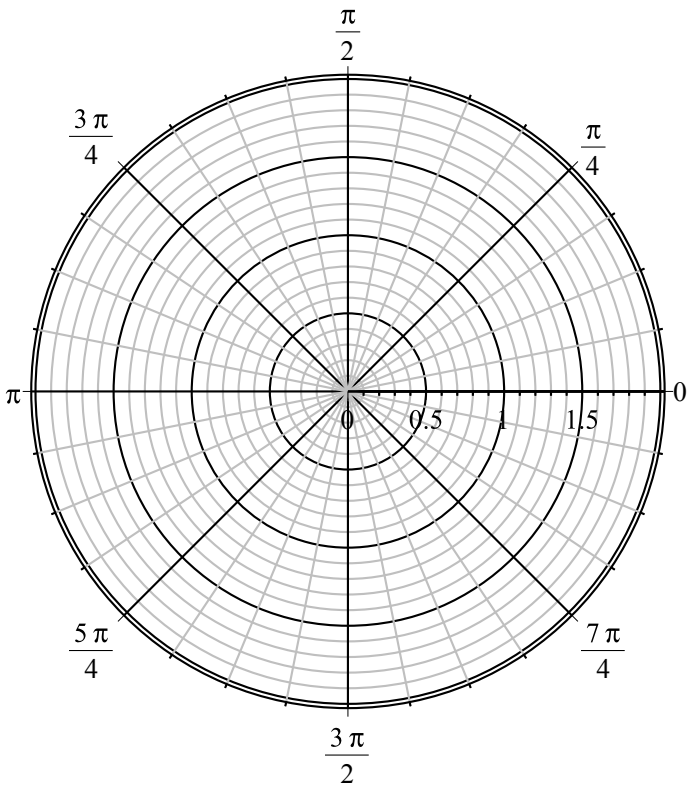


Tegne grafen til r^2 = 4 cos θ
- r = sqrt(4 cos θ)
polarplot(sqrt(4 cos(theta)), theta = 0 ..2 Pi)



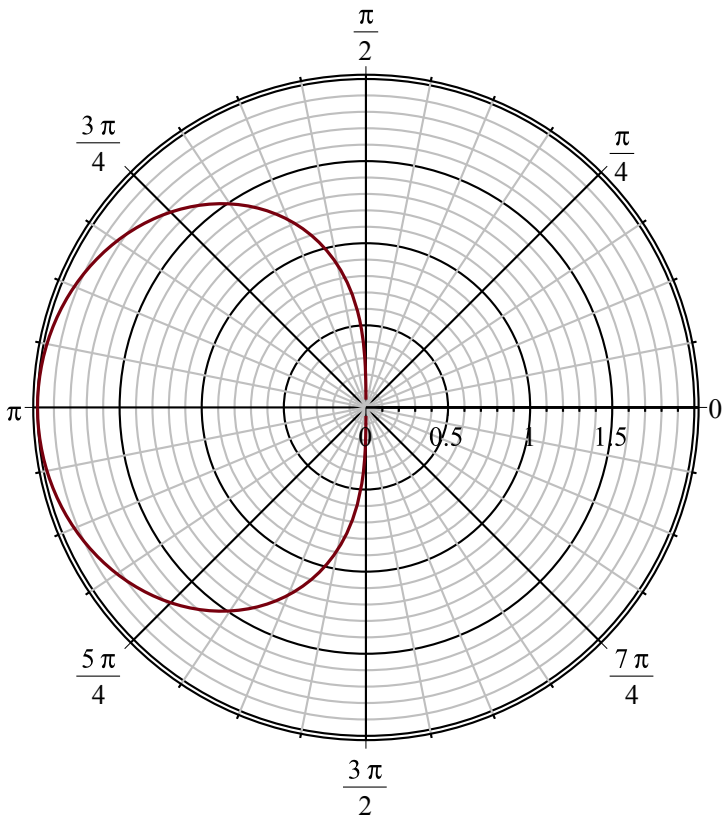
animate(*polarplot*, [(sqrt (4 cos (theta)) , theta = 0 .. *n*)], *n* = 0 .. 2 Pi)

$n = 0.$



- r = -sqrt(4 cos θ)

polarplot(−sqrt(4 cos(theta)), theta = 0 ..2 Pi)



- vi kan plotte dem sammen

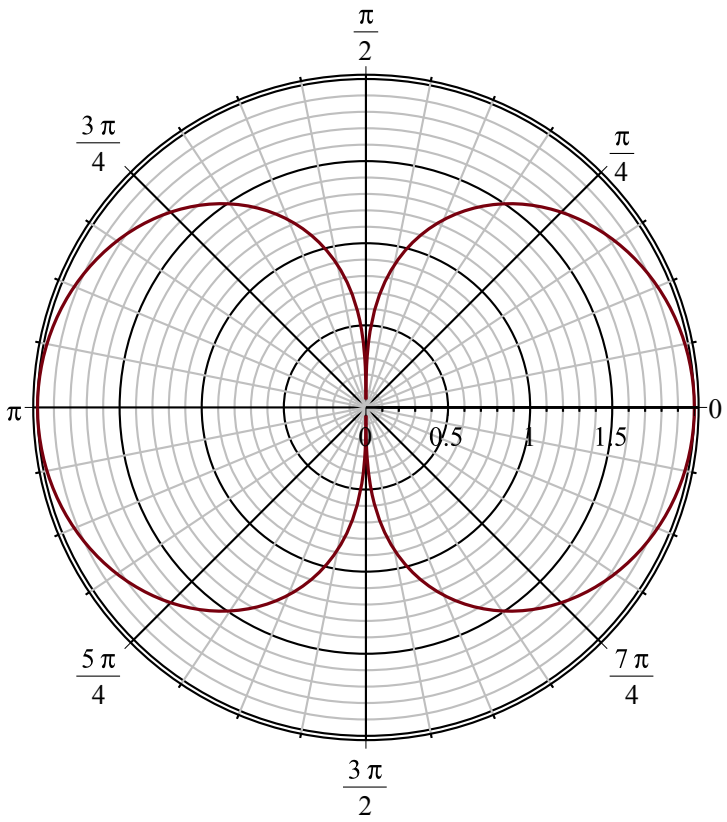
$P1 := polarplot(\mathrm{sqrt}(4\cos(\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

$PLOT(\ldots)$ **(2)**

$P2 := polarplot(-\mathrm{sqrt}(4\cos(\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

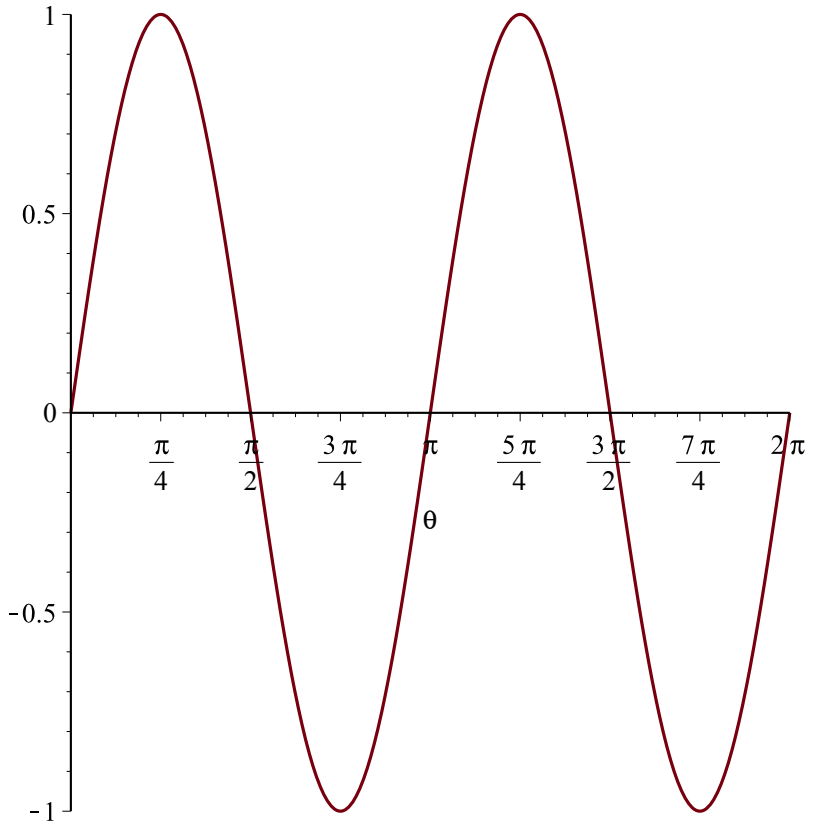
$PLOT(\ldots)$ **(3)**

$display(\{P1, P2\})$



Tegner grafen til r^2 = sin 2θ
- r^2-θ plot

plot(sin(2 theta), theta = 0 ..2 Pi)



- r-θ plot

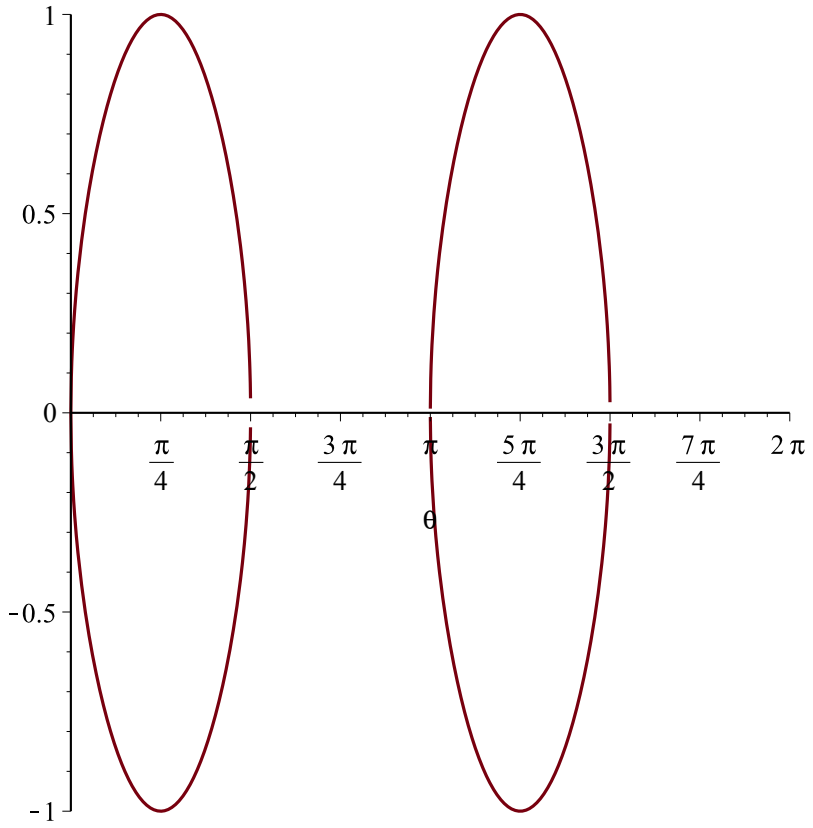
$P1 := plot(\mathrm{sqrt}(\sin(2\,\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

$PLOT(\ldots)$ **(4)**

$P2 := plot(-\mathrm{sqrt}(\sin(2\,\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

$PLOT(\ldots)$ **(5)**

$display(\{P1, P2\})$



- plot på xy planet

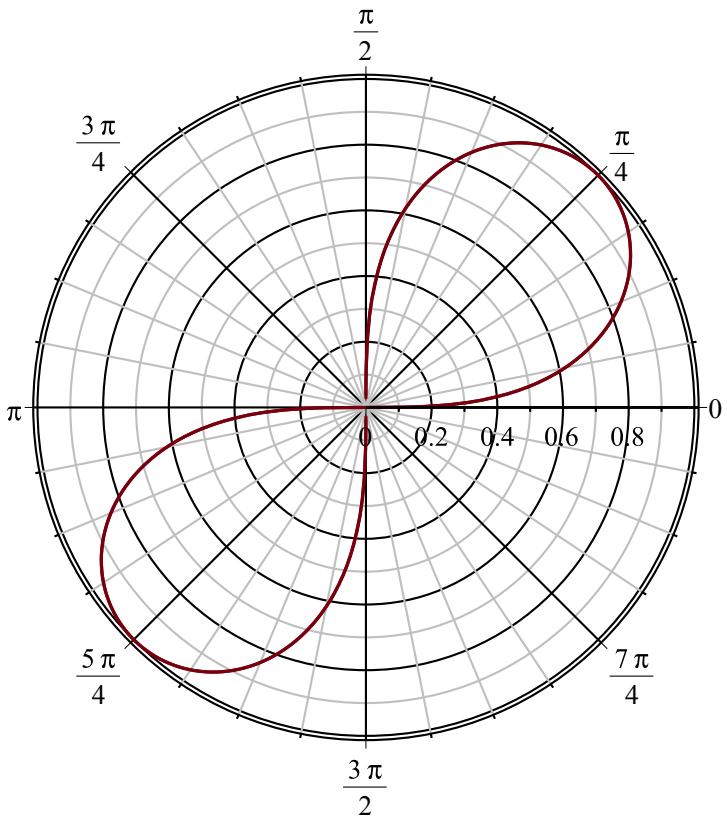
$P1 := polarplot(\mathrm{sqrt}(\sin(2\,\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

$PLOT(\ldots)$ **(6)**

$P2 := polarplot(-\mathrm{sqrt}(\sin(2\,\mathrm{theta})), \mathrm{theta} = 0..2\,\mathrm{Pi})$

$PLOT(\ldots)$ **(7)**

$display(\{P1, P2\})$

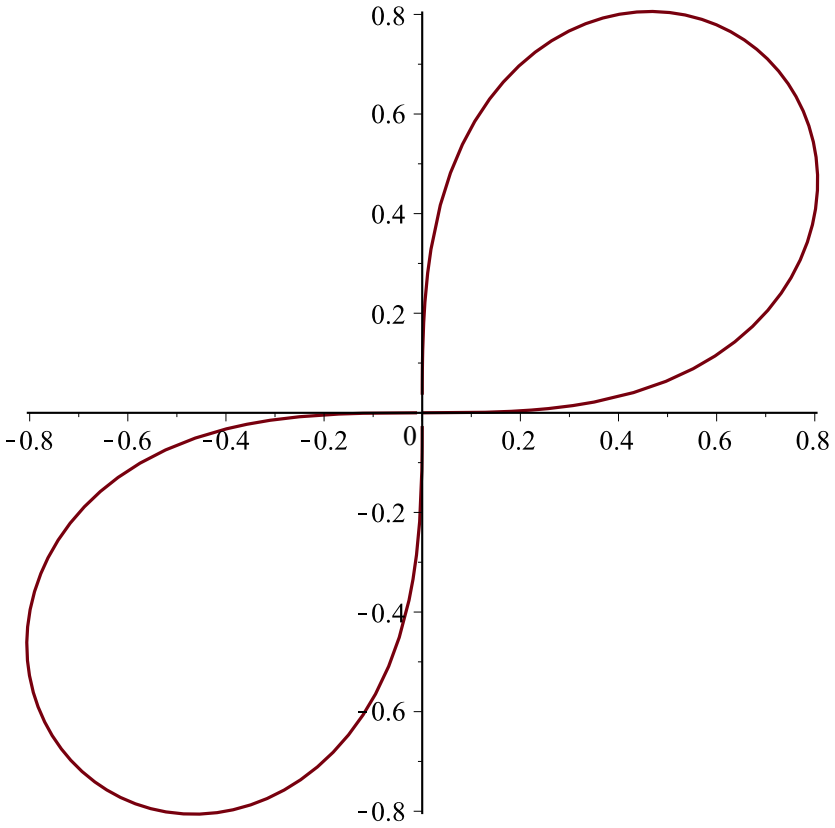


- som en parametrisk kurve (ikke glemm at -sqrt... er en også en løsning, det gir det samme)

$r := \text{theta} \to \text{sqrt}(\sin(2\ \text{theta}))$

$$\theta \to \sqrt{\sin(2\,\theta)} \qquad \textbf{(8)}$$

plot([r(theta)cos(theta), r(theta)sin(theta), theta = 0 ..2 Pi])



animate(*plot*, [([*r*(theta) cos(theta), *r*(theta) sin(theta), theta = 0 ..*n*])], *n* = 0 ..2 Pi)

$n = 0.$