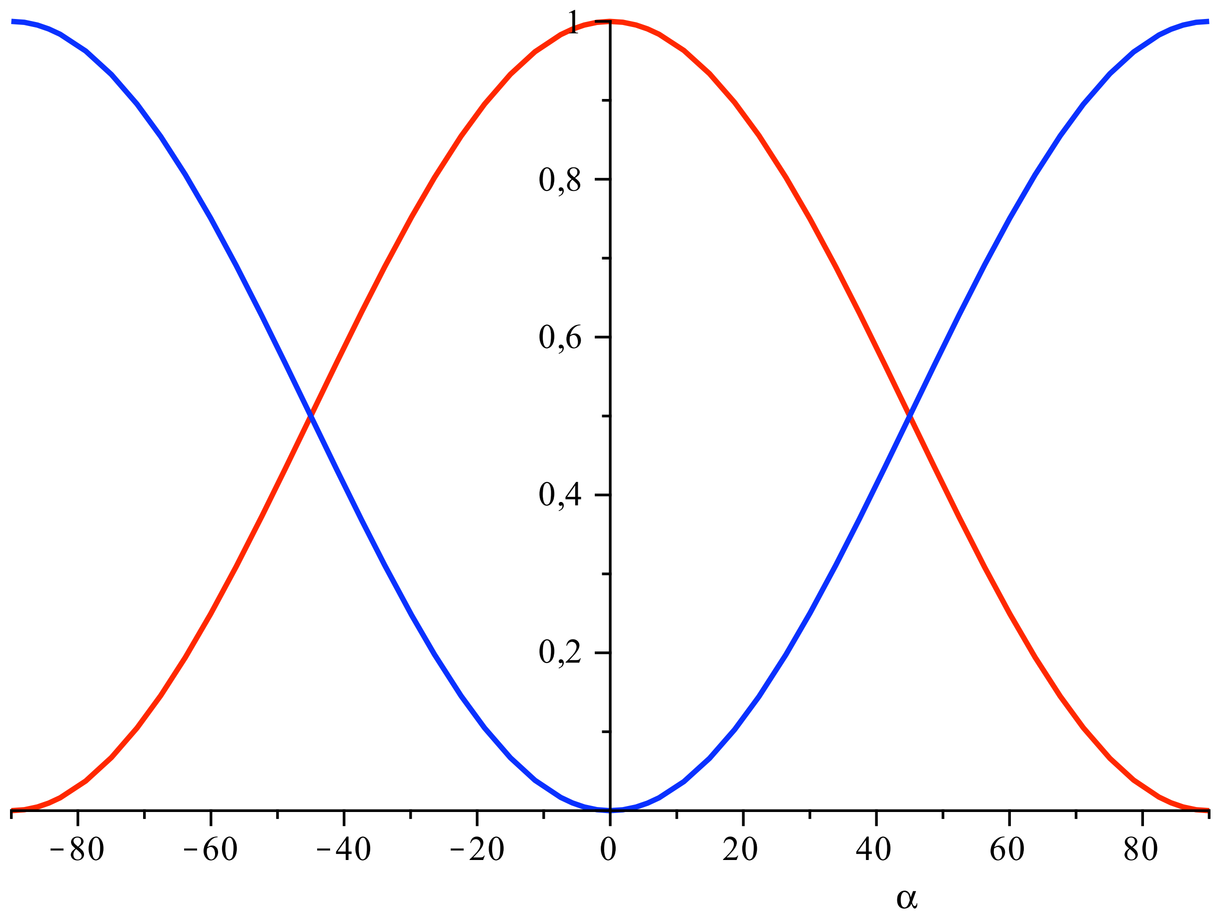
```
> restart; Digits:=14: pi:=evalf(Pi); with(plots):
```

$$\pi := 3.1415926535898 \quad (1)$$

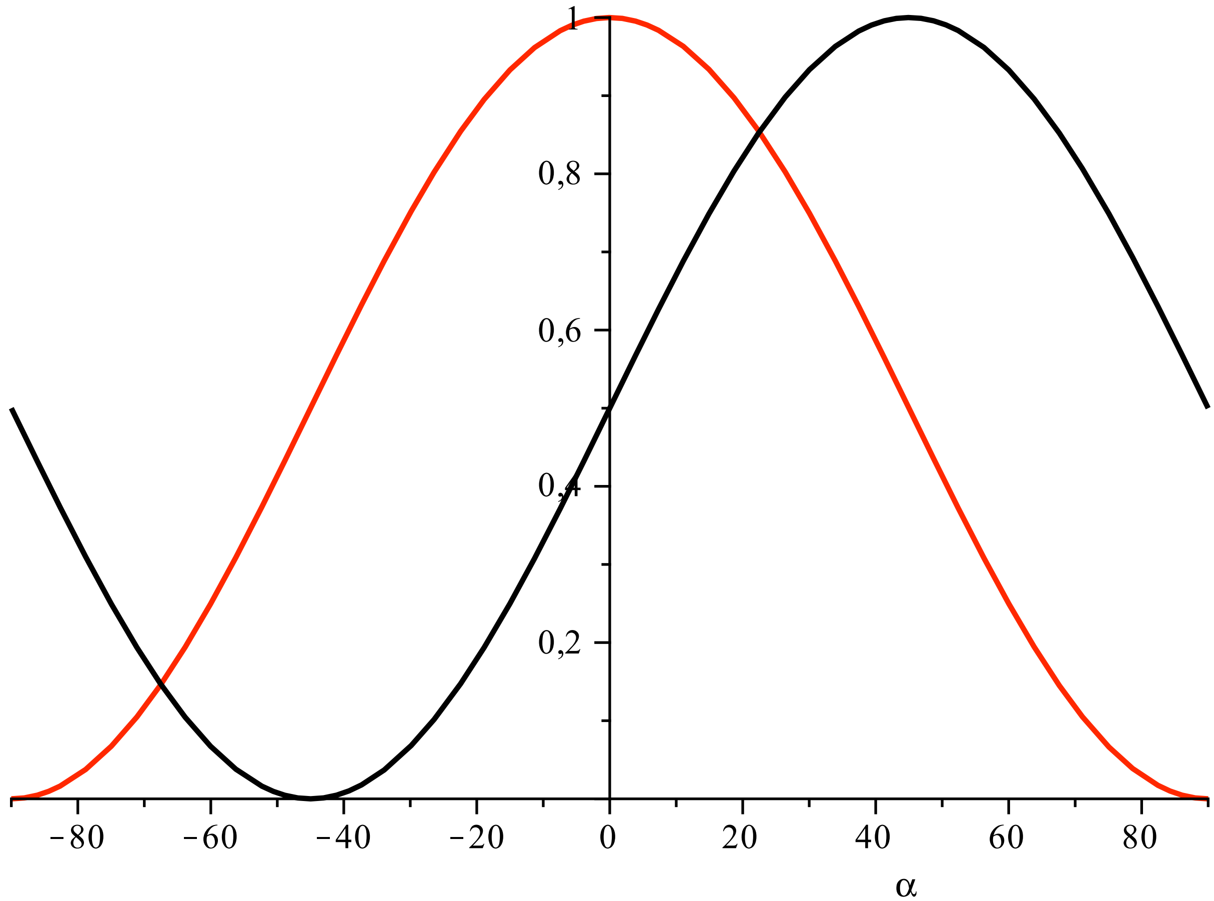
```
> IN:=phi->cos(pi/180*(alpha-phi))^2;
```

$$IN := \phi \rightarrow \cos\left(\frac{1}{180}\pi(\alpha-\phi)\right)^2 \quad (2)$$

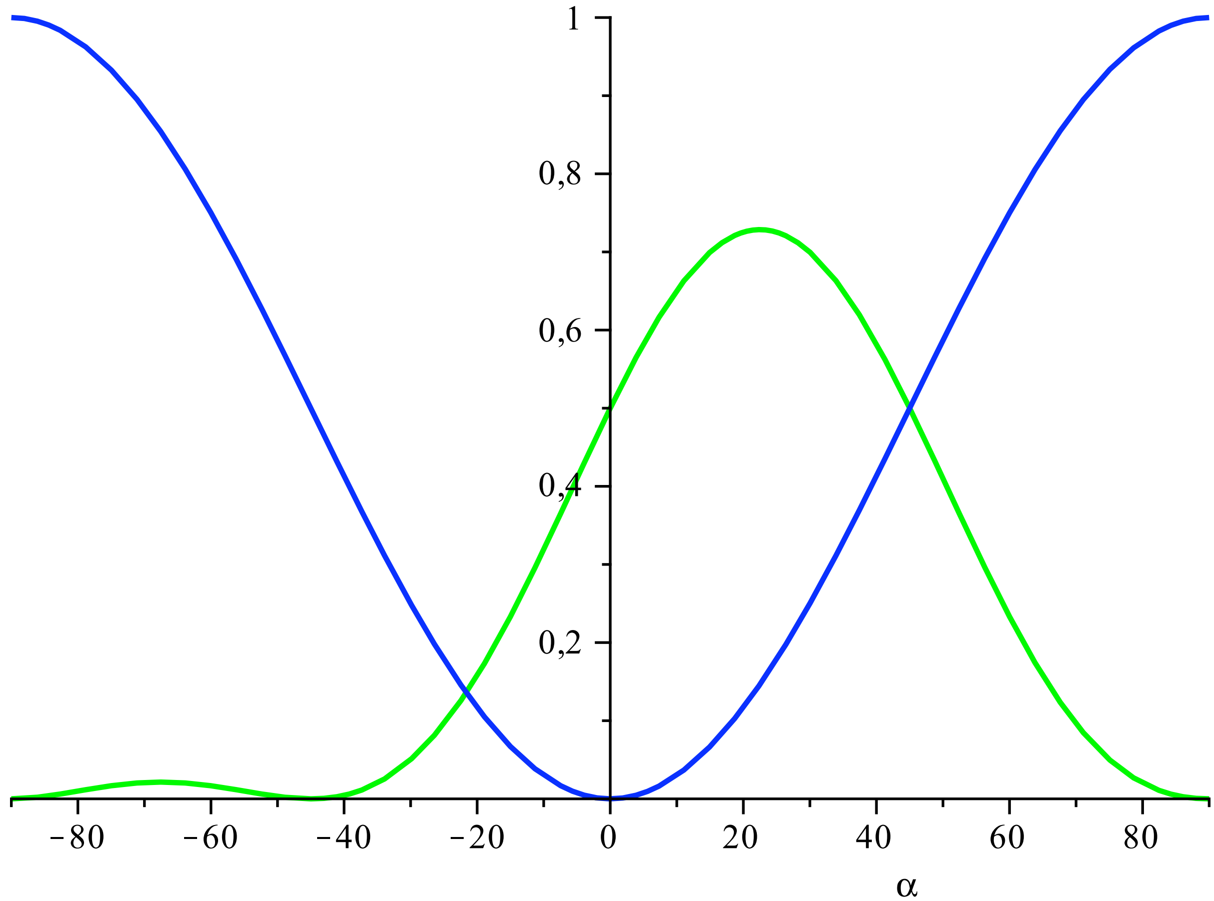
```
> P1:=plot(IN(0),alpha=-90..90,color=red,thickness=2):
> P2:=plot(IN(90),alpha=-90..90,color=blue,thickness=2):
> display(P1,P2);
```




```
> # the 45-degree polarizer case:
> plot([IN(0),IN(45)],alpha=-90..90,color=[red,black],thickness=2);
```




```
> plot([IN(0)*IN(45),IN(90)],alpha=-90..90,color=[green,blue],
  thickness=2);
```



> # one needs to be careful here: taking the product works only in order to understand: first polarizer produces polarized light, the second polarizer according to Mallus' law will pass this light according to the direction relative to the new axis. So we look what the blue curve predicts at the maximum of the green curve. The three-polarizer paradox can be explained on the basis of the quantum nature of photons (superposition principle), see the Feynman lectures in Physics.