

# Daylight hours

The maximum possible daylight hours can be calculated as:

$$N = \frac{24}{\pi} \omega_s$$

where  $\omega_s$  is the [sunset hour angle](#) in radians.

The following Python code demonstrates the calculation of possible daylight hours based on the calculation of [sunset hour angles](#) that depend on the calculation of [solar declination](#)

[daylighthours.py](#)

```
from pylab import *
from numpy import *
def daylighthours(latitude,J):
    ds=0.4093*sin(2*pi/365*J-1.405)    # to be replaced by class
    sha=arccos(-tan(latitude)*tan(ds)) # to be replaced by class
    dh=24/pi*sha
    return dh
latitude=23
J=arange(1,365,1)
plot(J,daylighthours(latitude,J))
ytext = ylabel('daylight hours')
xtext = xlabel('Julian day')
show()
```



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Last update: **2024/04/10 10:02**

