

Zadania – przykładowe rozwiązania

zad. 1.

```
import math as m

x = 2 + 1/(2*m.pi)
y = m.cos(3*x + 2)**2 / (1 + m.sqrt(m.sin(x+1) + 1/(3*x)))
print(y)

#wynik: 0.24885
```

zad. 2.

```
s1 = 0;
for i in range(10,22):
    s1 += (i+2)/i

s2 = 1;
for k in range(5,16):
    s2 *= k/(k+1)

s = 1/2*s1 + s2;
print(s);

#wynik: 7.1289
```

zad. 3.

```
import matplotlib.pyplot as plt
import numpy as np

x = np.linspace(-6,6,100)
f = x-x + 1
g = np.cos(x)/(np.sin(x)+3) + 1

plt.plot(x,f)
plt.plot(x,g)

plt.show()
```

zad. 4.

```
import numpy as np
from numpy.linalg import det,solve,inv

A = np.array([[1,-2,-1,-1],[0,3,1,-1],[-2,1,0,1],[2,-3,-1,-2]])
b = np.array([[2],[0],[2],[1]])
print(det(A))
x = solve(A,b)
print(x)

#wynik: [-1,1,-4,-1]
```

zad. 5.

```
import math as m

for n in range(21):
    a = m.sin(3*n+2) - m.sqrt(n)/(n+1)
    if a > 0:
        print(a)

#wynik: 0.90930, 0.51795, 0.59061, 0.56302, 0.44829
#0.26395, 0.029899, 0.16686, 0.41879
```

zad. 6.

```
import math as m

def walec(r,h):

    if r>0 and h>0:
        V = m.pi*r*r*h
    else:
        V = -1
        print('Podano bledne dane')

    return V

print(walec(2.5,7.3))
print(walec(2.5,-7.3))
```

zad. 7.

```
def funkcjaF(x):  
    if x < -2:  
        y = -2  
    elif x >= -2 and x < 2:  
        y = x  
    else:  
        y = 2  
  
    return y  
  
print(funkcjaF(-4))  
print(funkcjaF(0.7))  
print(funkcjaF(2.1))
```

zad. 8.

```
import numpy as np  
  
def przekatna_suma(A):  
    n, m = np.shape(A)  
  
    s = 0  
    if n == m:  
        for i in range(n):  
            if A[i][i] > 0:  
                s += A[i][i]  
  
    else:  
        print('Macierz nie jest kwadratowa')  
  
    return s  
  
M = np.array([[3, 4, 1], [-1, -3, -5], [1, 5, 7]])  
print(przekatna_suma(M))
```