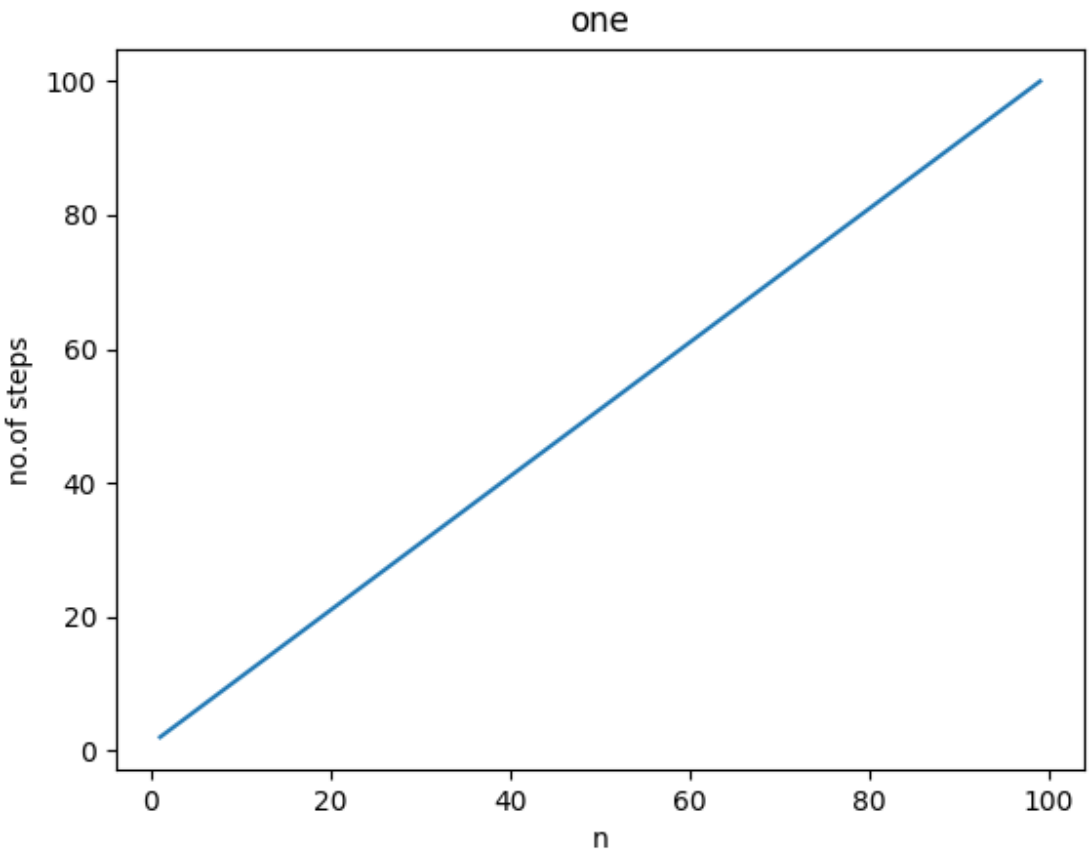
1)

```
import matplotlib.pyplot as plt

def fun(n,c):
    c+=1
    if n==0:
        return c
    else:
        return fun(n-1,c)

x=[]
y=[]
for i in range(1,100):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```



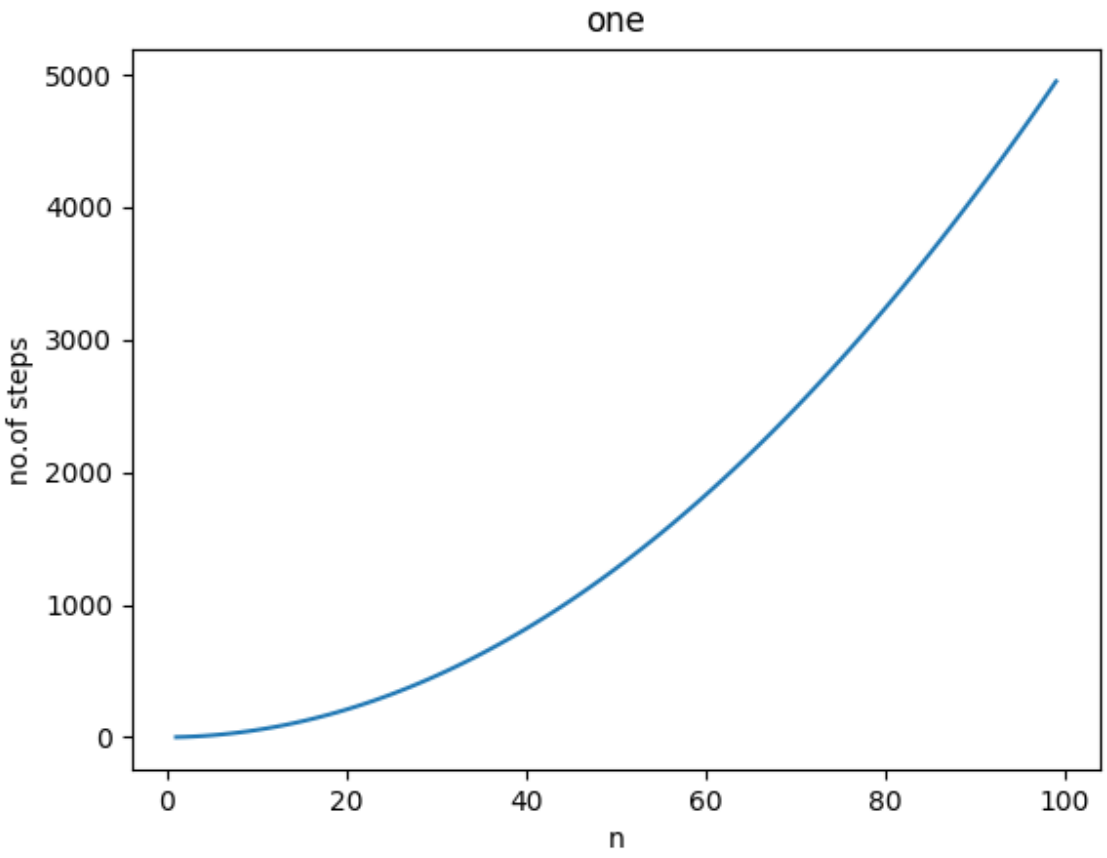
2)

```
import matplotlib.pyplot as plt

def fun(n,c):
    if n==0:
        return c
    else:
        for i in range(1,n+1):
            c+=1
        return fun(n-1,c)

x=[]
y=[]
for i in range(1,100):
    c=0
```

```
        x.append(i)
        c=fun(i,c)
        y.append(c)
    plt.title("one")
    plt.plot(x,y)
    plt.xlabel("n")
    plt.ylabel("no.of steps")
    plt.show()
```

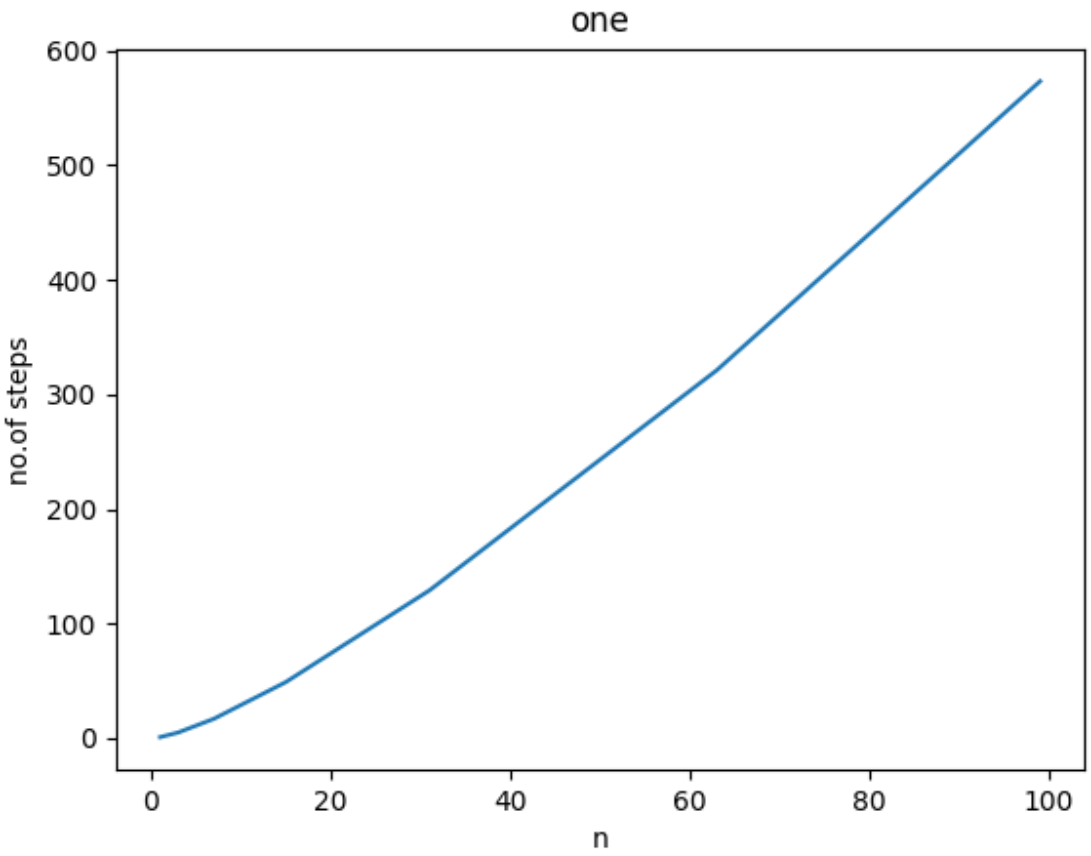


3)

```
import matplotlib.pyplot as plt

def fun(n,c):
    if n==0:
        return c
    else:
        i=1
        while i<=n:
            c+=1
            i*=2
        return fun(n-1,c)

x=[]
y=[]
for i in range(1,100):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```



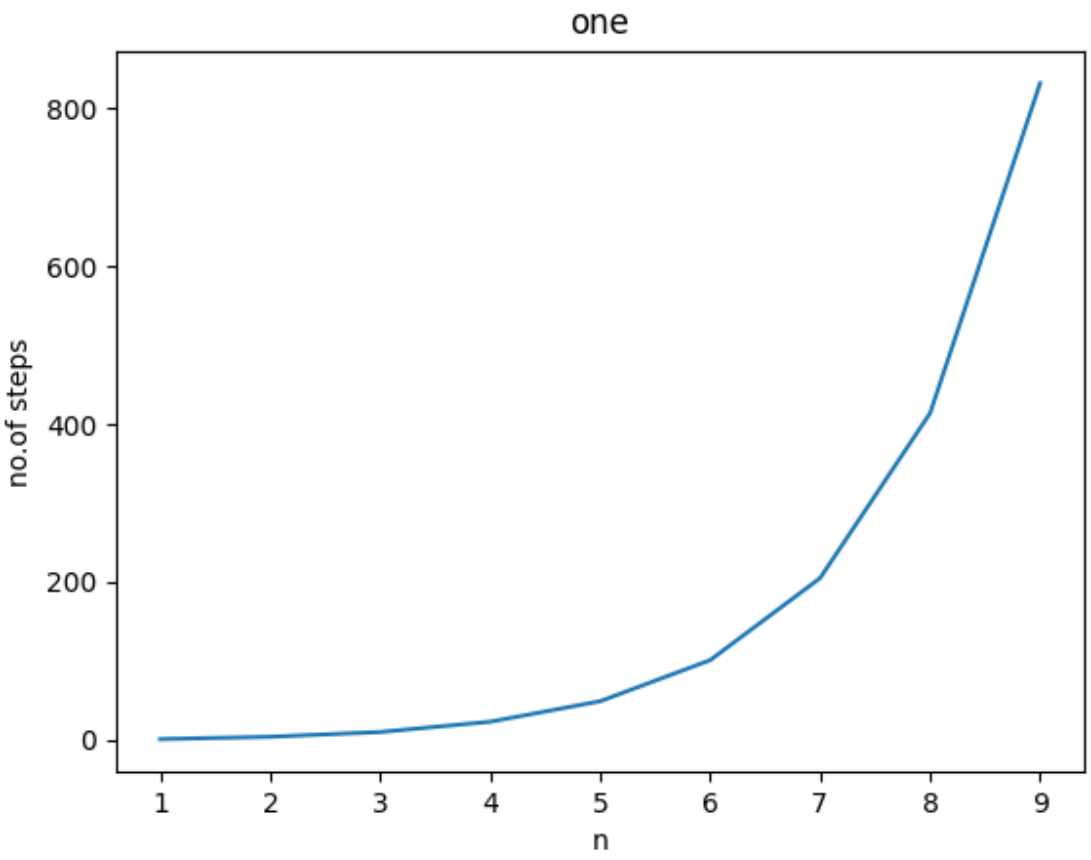
4)

```
import matplotlib.pyplot as plt

def fun(n,c):
    if n==0:
        return c
    else:
        i=1
        while i<=n:
            c+=1
            i*=2
        c=fun(n-1,c)
        return fun(n-1,c)

x=[]
```

```
y=[]
for i in range(1,10):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```

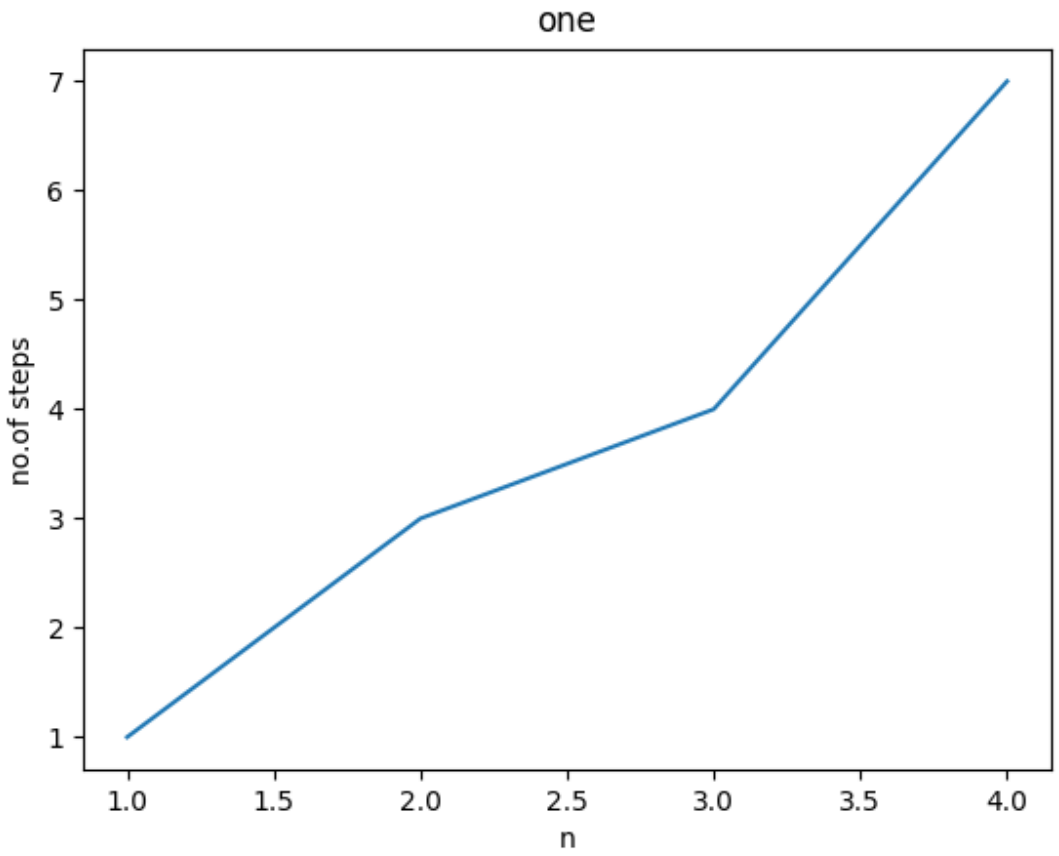


5)

```
import matplotlib.pyplot as plt
```

```
def fun(n,c):
    if n==0:
        return c
    else:
        i=1
        while i<=n:
            c+=1
            i+=1
        return fun(n//2,c)

x=[]
y=[]
for i in range(1,5):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```



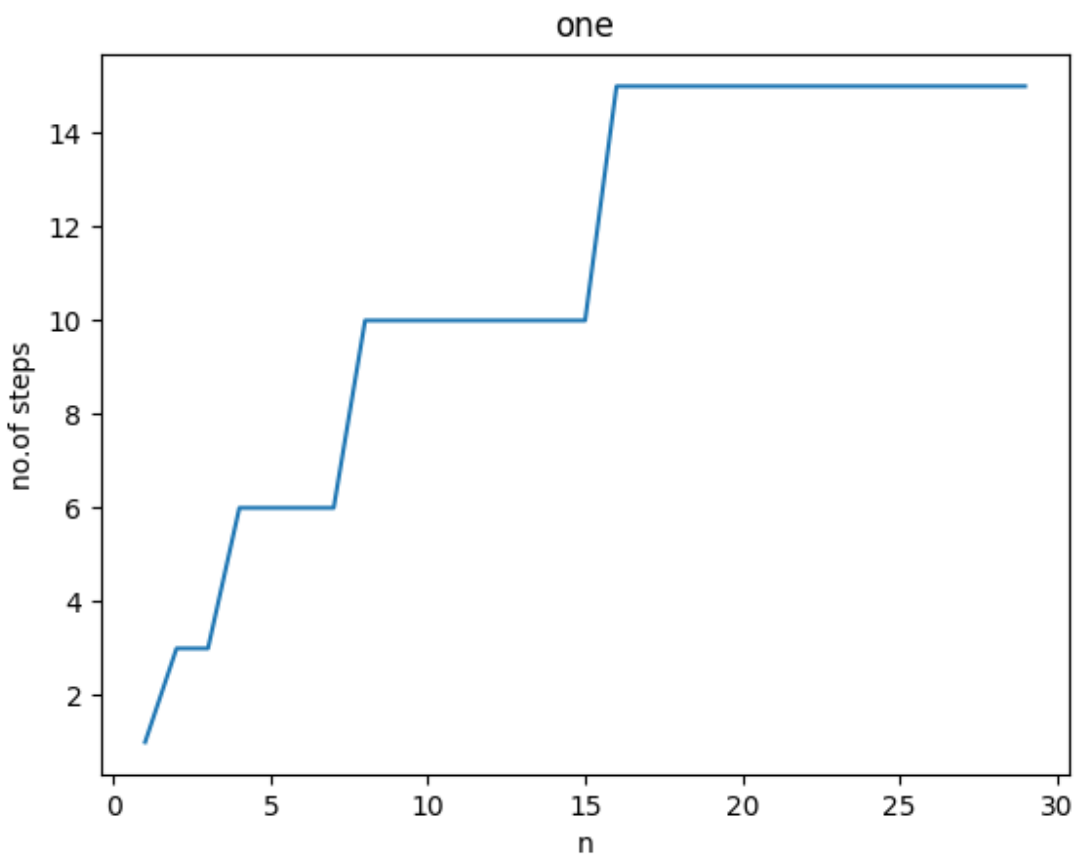
6)

```
import matplotlib.pyplot as plt

def fun(n,c):
    if n==0:
        return c
    else:
        i=1
        while i<=n:
            c+=1
            i*=2
        return fun(n//2,c)

x=[]
y=[]
```

```
for i in range(1,30):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```

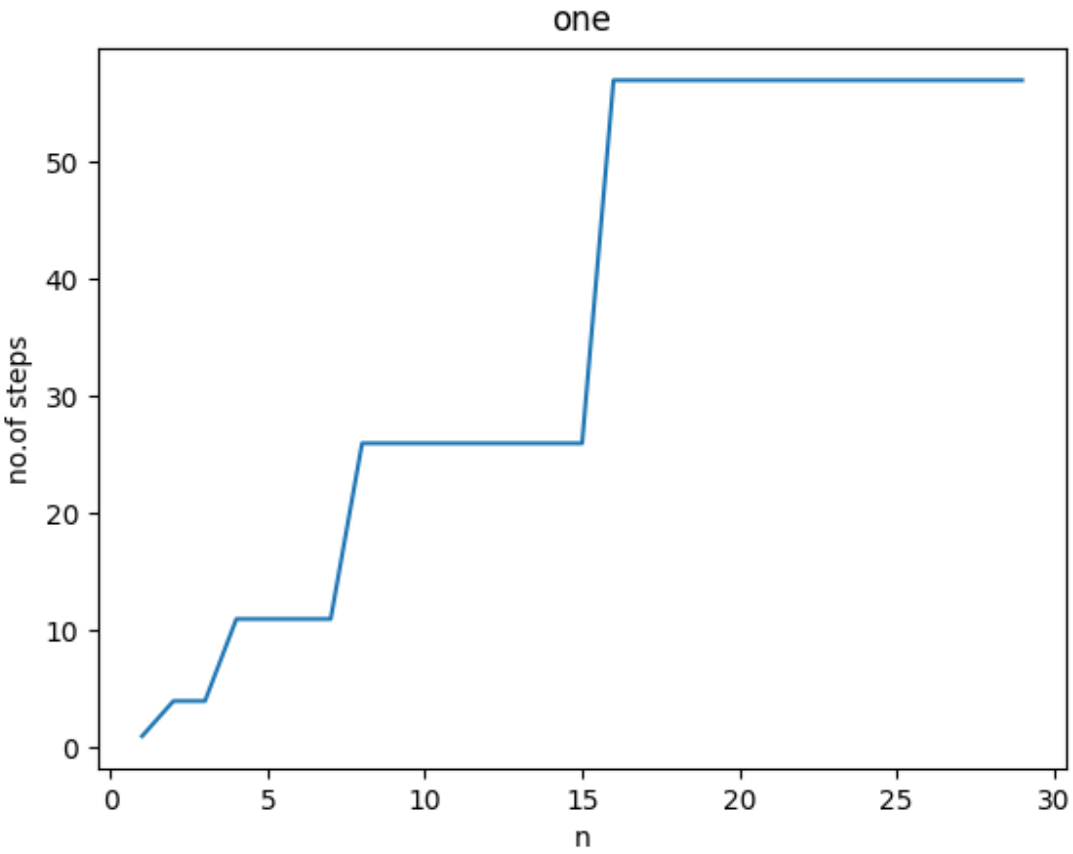


7)

```
import matplotlib.pyplot as plt
```

```
def fun(n,c):
    if n==0:
        return c
    else:
        i=1
        while i<=n:
            c+=1
            i*=2
        c=fun(n//2,c)
        return fun(n//2,c)

x=[]
y=[]
for i in range(1,30):
    c=0
    x.append(i)
    c=fun(i,c)
    y.append(c)
plt.title("one")
plt.plot(x,y)
plt.xlabel("n")
plt.ylabel("no.of steps")
plt.show()
```


one
no.of steps
n
0
10
20
30
40
50
0
5
10
15
20
25
30