```
def func_log(x):
    n=100000
    return n * ((x ** (1/n)) - 1)


def func_log_approx(x,a,n):
    n=n
    sum = log(a,n)
    if x>1: return func_log_approx(x/2,a,n) - func_log_approx(0.5,a,n)
    for i in range(1,n):
        coeff = ((-1)**(i+1))
        num = coeff*((x-a)**i)
        denum = (a**i)*i
        sum += num/denum
    return sum


def func_log_actual_approx(x,y,a,n):
    a=a
    n=n
    return log_approx(x,a,n)/log_approx(y,a,n)



import math


actual=math.log(8,2)
approx=func_log_actual_approx(8,2,10,150)
error=abs(approx-actual)
print("Actual value of log:",actual)
print("Approximate value of log:", approx)
print("Error:", error)
```

```
Actual value of log: 3.0
Approximate value of log: 2.9487405323999933
Error: 0.05125946760000666
```

```
-0.34038546518413443
```