Problem 56

A googol (10^{100}) is a massive number: one followed by one-hundred zeros; 100^{100} is almost unimaginably large: one followed by two-hundred zeros. Despite their size, the sum of the digits in each number is only 1.

Considering natural numbers of the form, a^b, where a, b < 100, what is the maximum digital sum?

Solution

In[129]:=
```
Max @@ (Total[IntegerDigits[#]] & /@ Flatten@Table[a^b, {a, 2, 99}, {b, 2, 99}])
```

Out[129]=
```
972
```