Math555 Homework 6

Note: To submit the k-th homework, simply put your files in the folder `HWk` on CoCalc, and it will be collected on the due day.

1. Define a function $\nu(n)$ by the following recurrence relation.

$$\nu(n) = \begin{cases} 1 & \text{if } n = 1; \\ -\sum_{\substack{d\mid n \\ d \neq n}} \nu(d) & \text{otherwise.} \end{cases}$$

   Show that $\nu(n) = \mu(n)$ for all $n \geqslant 1$.

2. Use Sage to write a function for the Euler's totient function $\phi(n)$ and another function for the Möbius inverse function $\mu(n)$. See the file `SageProject1_blank.sagews` in your CoCalc folder.