Just a handful of ways to express the count of primes function. Not sure why I was collecting these at this point.

Count of Primes

$$\pi(n)=\sum_{k=1}^{\lfloor \log_2 n \rfloor} \frac{\mu(k)}{k} \lim_{z\to 0} \frac{1}{z}\left(-1+\sum_{j=1}^{\lfloor n^{\frac{1}{k}} \rfloor} \prod_{p^{\alpha}|j} \frac{z(z+1)\ldots(z+\alpha-1)}{\alpha!}\right)$$

$$\pi(n)=\sum_{k=1}^{\lfloor \log_2 n \rfloor} \frac{\mu(k)}{k} \sum_{j=2}^{\lfloor n^{\frac{1}{k}} \rfloor} 1-\frac{1}{2}\sum_{j=2}^{\lfloor n^{\frac{1}{k}} \rfloor} \sum_{k=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j} \rfloor} 1+\frac{1}{3}\sum_{j=2}^{\lfloor n^{\frac{1}{k}} \rfloor} \sum_{k=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j} \rfloor} \sum_{l=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j\cdot k} \rfloor} 1-\frac{1}{4}\sum_{j=2}^{\lfloor n^{\frac{1}{k}} \rfloor} \sum_{k=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j} \rfloor} \sum_{l=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j\cdot k} \rfloor} \sum_{m=2}^{\lfloor \frac{n^{\frac{1}{k}}}{j\cdot k\cdot l} \rfloor} 1+\frac{1}{5}\ldots$$

$$\pi(n)=\sum_{k=1}^{\lfloor \log_2 n \rfloor} \frac{\mu(k)}{k} f_1(\lfloor n^{\frac{1}{k}} \rfloor) \text{where } f_k(n)=\sum_{j=2}^{n} \frac{1}{k}-f_{k+1}(\lfloor \frac{n}{j} \rfloor)$$

$$\pi(n)=\sum_{k=1}^{\lfloor \log_2 n \rfloor} \frac{\mu(k)}{k} f(\lfloor n^{\frac{1}{k}} \rfloor,\lfloor n^{\frac{1}{k}} \rfloor,1) \text{ where } f(n,j,k)=\frac{1}{k}-f(\lfloor \frac{n}{j} \rfloor,\lfloor \frac{n}{j} \rfloor,k+1)+f(n,j-1,k) \text{ and } f(n,1,k)=0$$

$$\pi(n)=\sum_{k=1}^{\lfloor \log_2 n \rfloor} \sum_{j=1}^{\lfloor \log_2 n^{\frac{1}{k}} \rfloor} \frac{(-1)^{j-1}\mu(k)}{jk} f_{j,2}(n^{\frac{1}{k}}) \text{ where } f_{k,a}(n)=\sum_{j=1}^{k} \binom{k}{j} \sum_{m=a}^{\lfloor n^{\frac{1}{k}} \rfloor} f_{k-j,m+1}\left(\frac{n}{m^j}\right) \text{ and } f_{0,a}(n)=1$$