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$$q_u = -g_{2u} = \prod_{p|u} (1 \pm p). \quad (73)$$

Comparing, on both sides, the coefficients of x^3 we have, since $S_1(u) = u^3 - u$,

$$\begin{aligned} L(\mu - 1) \sigma_3 = & -U(\mu) - 2\sigma_1^2 U(\mu - 2) + \\ & + \frac{\sigma_1^3}{6} (L(\mu - 3) - L(\mu - 1)). \end{aligned} \quad (74)$$

From this formula, we can again express σ_3 by means of the functions $U(s)$, $L(s)$ and proceeding in the same way obtain for a general σ_x , interpreted as a *formal* Dirichlet series, expressions containing only $\sigma_1, \dots, \sigma_{x-1}$. However, already the expression for σ_3 becomes essentially more complicated than those of σ_1 and σ_2 . We give here only the expression for the coefficient of $\frac{1}{p^\mu}$ for an odd prime number p in σ_3 :

$$\frac{1}{6} \left((-1)^{\frac{p-1}{2}} p - 1 \right) \left((-1)^{\frac{p-2}{2}} p - 5 \right) \left((-1)^{\frac{p-1}{2}} p - 6 \right),$$

which is easily obtained from (74) and has been derived directly by Dr. J. C. P. Miller. It is easy to see that this is always divisible by 16.

BIBLIOGRAPHY

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