From this generating function, we read off values of the partition function (the coefficient of $x^n$), e.g. the number of partitions of 19 is $p(19) = 490$. The product above should actually be infinite; but factors for $k > 30$ will not affect the first 25 terms so I have been content to include only factors for $k = 1, 2, ..., 30$.

Similarly, the number of partitions of 19 into parts of size at most 8 is 352: this is the coefficient of $x^{19}$ in

$$\frac{1}{\prod (1 - x^k, k=1..8)}; \text{series}(%,x=0,30);$$

Similarly, the number of partitions of 19 into parts of size at most 7 is 300: this is the coefficient of $x^{19}$ in

$$\frac{1}{\prod (1 - x^k, k=1..7)}; \text{series}(%,x=0,30);$$

So we deduce that the number of partitions of 19 into parts of maximum size 8 is $352 - 300 = 52$. This gives the value $p_8(19) = 52$. Maple also has builtin functions for computing partition numbers; in this case

$$\text{with(combinat): numbpart(19); numbpart(19,8); numbpart(19,8) - numbpart(19,7);}$$

$490 - 352 = 138$.
For more details on these black box functions in Maple, consult the Maple 'Help' feature (e.g. look up 'partition').