Let $b_1 = -a_1$.

Given $b_1, \ldots, b_{m-1}$

Let

$$g_m = \text{Coeff of } q^m \text{ in } \prod_{n=1}^{m-1} (1-q^n)^{b_n}$$

Then

$$b_m = g_m - a_m.$$

An implementation is given as prodmake(QS, q, T) in the file FUNCS.txt.