

[mex198] Determine canonicity and generating functions IV

Consider the following transformation from a set of canonical coordinates (q, p) to a new set of coordinates (Q, P) :

$$Q = q^k p^l, \quad P = q^m p^n.$$

(a) For what values of the exponents k, l, m, n is this transformation canonical? (b) Find the generating function $F_1(q, Q)$ for those values. (c) One canonical case cannot be covered by the function $F_1(q, Q)$. Why not?

Solution: