ABSTRACT. The map $\phi(x,y) = (\sqrt{1+x^2} - y, x)$ of the plane is area preserving and has the remarkable property that in numerical studies it shows exact integrability: The plane is a union of smooth, disjoint, invariant curves of the map ϕ. However, the integral has not explicitly been known. In the current paper we will show that the map ϕ does not have an algebraic integral, i.e., there is no non-constant function $F(x,y)$ such that

1. $F \circ \phi = F$;
2. There exists a polynomial $G(x,y,z)$ of three variables with

$$G(x,y,F(x,y)) = 0.$$

Thus, the integral of ϕ, if it does exist, will have complicated singularities. We also argue that if there is an analytic integral F, then there would be a dense set of its level curves which are algebraic, and an uncountable and dense set of its level curves which are not algebraic.