Seiji Nishioka : Double-angle formulae and algebraic independence .

Looking at the double-angle formula of the cosine function, we find a polynomial in itself of degree 2. The exponential function also has a double-angle formula with a polynomial of degree 2, and Weierstrass function has one with a rational function of degree 4. Additionally, the independent variable has one with polynomial of degree 1. Since we obtained different numbers, 2, 4 and 1, we find that the exponential/cosine function, Weierstrass function and the independent variable are algebraically independent over the field of complex numbers. I will introduce the reason of the above argument and an application to the theory of transcendental numbers.