Real Mathematics Fact

Snapple includes "Real Facts" on the underside of the caps to their beverages. A number of them have been about mathematics, including the following.

Snapple's "Real Fact" #804 states that "There are 293 ways to make change for a dollar." Using pennies, nickels, dimes, quarters, half-dollars, and dollar coins, the number of ways to make change for a dollar is equal to the coefficient of the x^{100} term in the series expansion of the closed-form generating function

$$C(x) = \frac{1}{(1 - x^1)(1 - x^5)(1 - x^{10})(1 - x^{25})(1 - x^{50})(1 - x^{100})}.$$

This coefficient is indeed 293.

—Submitted by Stanley R. Huddy,
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