NESTED SQUARES AND EVALUATIONS OF INTEGER PRODUCTS

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ABSTRACT. The identity

$$\left((x^2-85)^2-4176\right)^2-2880^2=(x^2-1^2)(x^2-7^2)(x^2-11^2)(x^2-13^2),$$

discovered by R. E. Crandall, allows the evaluation of a product of 8 integers by a succession of 3 squares and 3 subtractions. The question arises whether there exist formulas like Crandall's with more than 3 nested squares. It will be shown that this is not the case; however, there are infinitely many formulas of length 3.