

# A mathematical question

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January 4, 2016

**Definition.** A number  $n$  will be called *noteworthy* if

$$n = x^4 - x^3 - x^2 + x = y^3 - y^2 - y + 1$$

for some integers  $x, y$ .

The numbers 0, 96 and 2016 are noteworthy thanks to the equalities

$$0 = 1^4 - 1^3 - 1^2 + 1 = 1^3 - 1^2 - 1 + 1,$$

$$96 = (-3)^4 - (-3)^3 - (-3)^2 + (-3) = 5^3 - 5^2 - 5 + 1,$$

$$2016 = 7^4 - 7^3 - 7^2 + 7 = 13^3 - 13^2 - 13 + 1.$$

**Question.** Are there noteworthy numbers other than 0, 96 and 2016?