

Math Diversion Problem 415

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When I give this talk to a physics audience, I
remove the quotes from my 'Theorem'.
— Brian Greene

The YouTube video is found at:

Source: <https://www.youtube.com/watch?v=IJkv11ZKhFk>
Title: Brazil's Toughest Math Olympiad Challenge
Presenter: Smart math tricks

1 The Problem

Given the relation

$$9^x - x^4 = 65, \tag{1}$$

find the values of x .

2 The Solution

After many failed attempts to solve this, I finally decided to try to solve it by use of a table. And here goes:

x	9^x	x^4	$9^x - x^4$
1	9	1	8
2	81	16	65 ✓

Table 1: Heuristic: Solved by Table.

Therefore

$$x = 2. \tag{2}$$