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$$x^2 + y^3 = z^7$$

There are 16 solutions to $x^2 + y^3 = z^7$ in relatively prime integers, one of which is $(21063928, -76271, 17)$ (joint work with Ed Schaefer and Michael Stoll). I will explain why the existence of such solutions is not surprising, and I will sketch how one proves statements like this.