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Title: On the Diophantine equation $cy^l = \frac{x^p-1}{x-1}$

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Let p, c be distinct odd primes, and $l \geq 2$ an integer. We find sufficient conditions for the Diophantine equation

$$cy^l = \Phi_p(x) = \frac{x^p - 1}{x - 1} = x^{p-1} + x^{p-2} + \cdots + 1$$

not to have integer solutions.

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