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Complex analysis midterm 06

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[This document is
http://www.math.umn.edu/~garrett/m/complex/examples_2014-15/midterm_06.pdf]

Please write on one side of a page, with your name on every page.

Please restate the respective questions, and respond in complete sentences, in standard English, legibly. The goal is *explanation* and also *persuasion*, not crypticness or telegraphic-ness.

Responses should be intelligible *without* definitive prior expertise. That is, the message(s) should be intelligible without knowing the message(s) in advance.

Questions are equally weighted.

[06.1] What is the genus of the projective curve arising from $y^2 = x^5 - 1$?

[06.2] What is the genus of the projective curve arising from $y^5 = x^5 - 1$?

[06.3] Determine the points $x \in \mathbb{C}$ over which the curve $y^7 + 7xy + x^3 = 0$ has non-trivial ramification.

[06.4] What is the nature of the ramification of the curve $y^5 + xy^2 + x^6 = 0$ above a neighborhood of $x = 0$?
