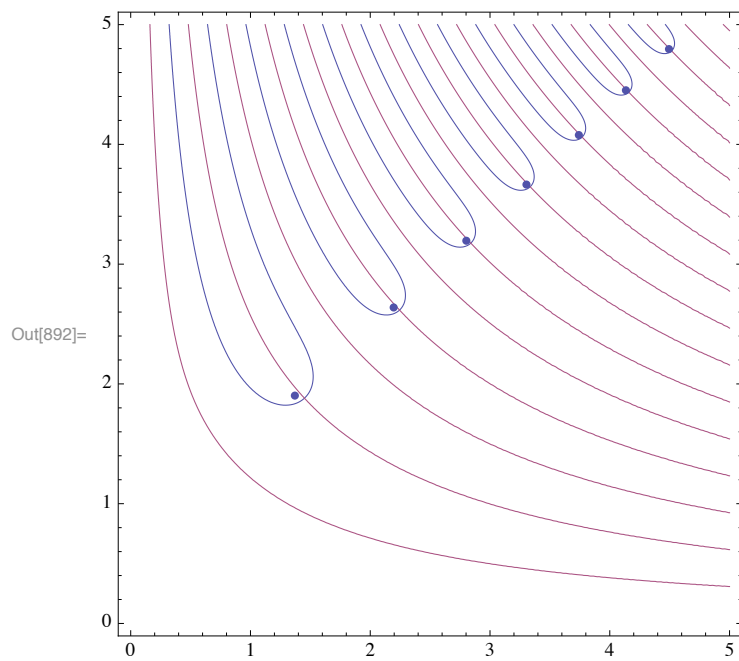# Letter to Michael Berry

Nicholas Wheeler
26 March 2018

Dear Michael,
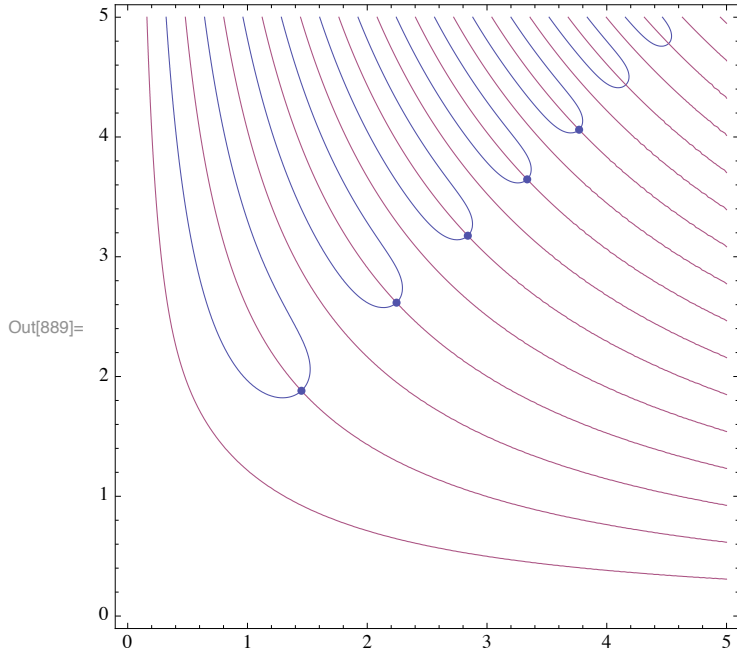
Thank you for yesterday's letter. Of all my correspondents your response time is certainly the quickest!

Your letter referred to some figures whch I think you forgot to attach. But no problem; I was able to reconstruct them, and had some fun doing so.
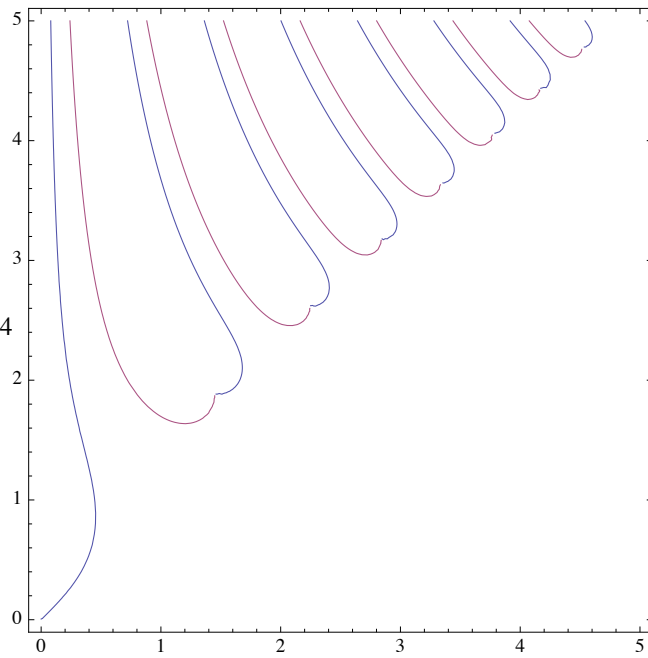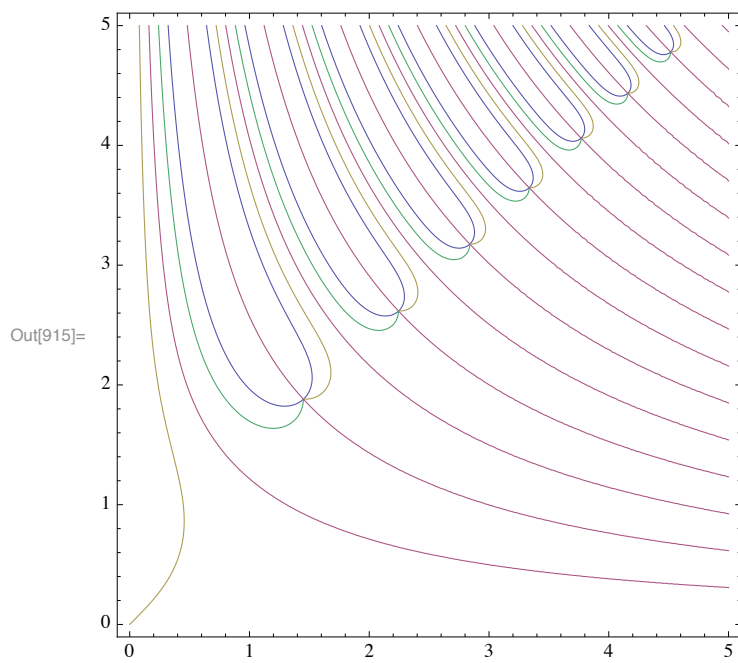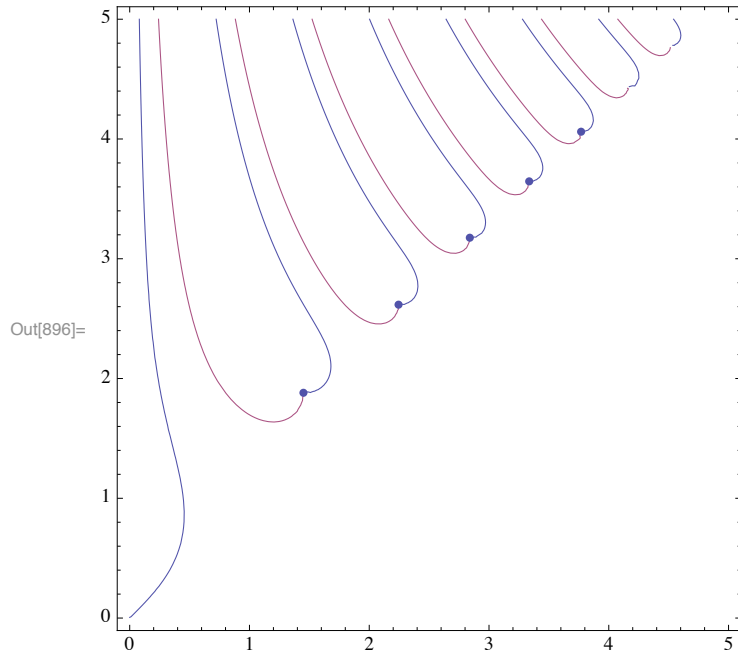
Your approximate zeros algorithm produced this figure:

Out[892]=

while the 10-decimal data reported in DLMF produced this:

Out[889]=

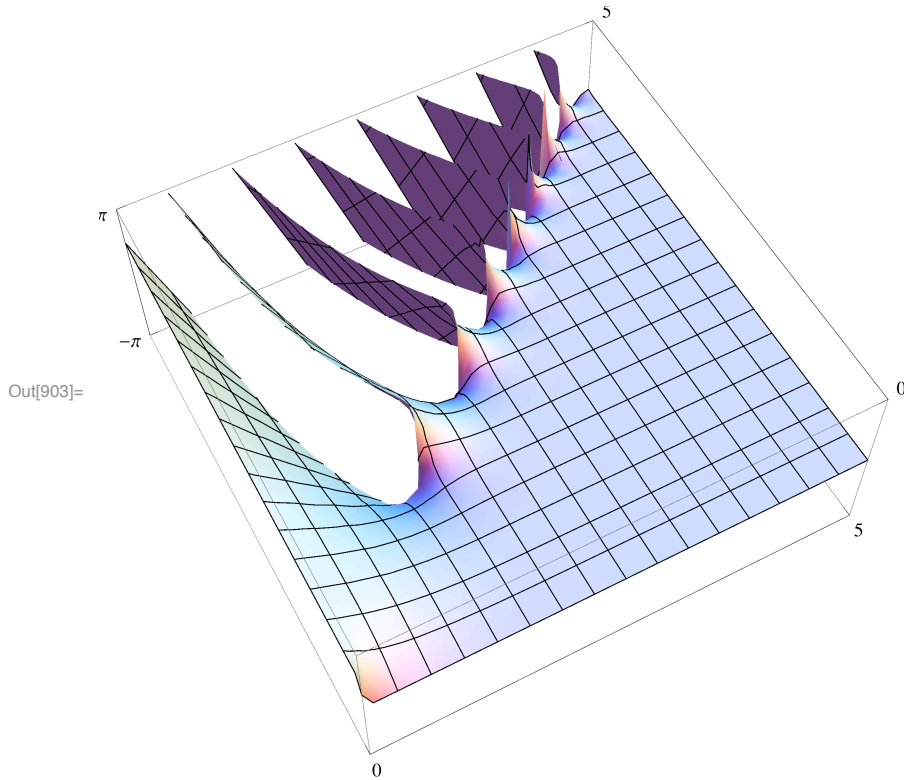

These are the anti-Stokes lines (phase = ± 1/4)

In view of your remarks ("Close, but not exactly on the lines") about "dominance of subdominant exponentials" I was surprised to find that—at least in this resolution—the exact zeros appear to lie "exactly on the lines," as evident in these two figures:

Out[896]=

Out[915]=

This is a view of the 3D phase surface on which the anti-Stokes lines are inscribed:

Out[903]=

I have well-thumbed copies of Abramowitz & Stegun in both offices (Reed & home), but am glad to be reminded of its digital successor: DLMF.

Glad also to learn of the existence of Dingle's book, and of its availability on your website. And to learn something (from your obituary piece) about Dingle the man. You cite a list of 16 Berry papers (#181 - #265) that related to Dingle's work, but the list does not include #370 so is, I gather, by now quite incomplete. I am touched by evidence of your affection for and high regard of the man, and by the thought of how proud he must have been to have produced a student who has contributed so productively to an area so close to his own interests. Seems a pretty story, rather like Crandall's and mine.

I must track down some of those other elementay models of superoscillation that you mention.

Regards,

Nicholas

PS: It is now 1:45 AM in Bristol; can't expect one of your famous "responses within the hour." Or, indeed, any response at all.