

Here are the special function optional presentations!

Your presentation will consist of a “fun facts” handout and a  $\sim 7$  min presentation focusing on one aspect of your function, such as a cool application of your special function or the highlights of the series solution. The sequence is the order of presentation. “1” ’ s present first, then “2” ’ s and etc.

When you present your special function be sure to include on your fun facts sheet, if relevant:

- \* The ODE
- \* A few solutions
- \* The series solution
- \* Plots
- \* Orthogonality and normalization
- \* Generating functions
- \* Rodrigues formula
- \* Recursion relations, etc. as applicable

and

- \* One cool application and amusing fact about the special functions.

Hard copy or pdf is fine. If you would like me to make copies, please submit your “Fact Facts” pages, electronic or hard copy, at least one day before your presentation.

Person	Special Function (and a starting reference)	Sequence
Seth	Hermite polynomials	0
Carlo	Legendre (NIST Handbook, Boas 564-567, 569-572, 577-580)	1
Hannah	Dirac Delta “function” (Boas 449-456)	1 or 2
John	Gamma function (Boas 538-541, 552-553 Stirling approx.)	1
Spencer	Bessel functions (NIST Handbook, Boas 587-594, 601-602)	1
Thomas	Laguerre (NIST Handbook, Boas 609-610)	2
Brett	Airy functions (Boas, NIST Handbook)	2
Omar	Chebyshev poly’s (NIST Handbook, Brian C)	3
Andrew	Associated Legendre (NIST Handbook, Boas 583-84)	3
Alexei	Associated Laguerre polynomials (NIST Handbook, Boas 610-611, prob. 20)	4

Boas has a nice intro to many of these functions. MathWorld (on the web, linked to on the website) useful as well.