1016-33-82   **Mark W Coffey*** (`mcoffey@mines.edu`), Department of Physics, 16th and Illinois Streets, Golden, CO 80401. *Special functions and the Mellin transforms of Laguerre and Hermite functions.*

We present explicit expressions for the Mellin transforms of Laguerre and Hermite functions in terms of a variety of special functions. We show that many of the properties of the resulting functions, including functional equations and reciprocity laws, are direct consequences of transformation formulae of hypergeometric functions. Interest in these results is reinforced by the fact that polynomial or other factors of the Mellin transforms have zeros only on the critical line Re $s = 1/2$. We additionally present a simple-zero Proposition for the Mellin transform of the wavefunction of the D-dimensional hydrogenic atom. These results are of interest to several areas including quantum mechanics and analytic number theory. (Received February 01, 2006)