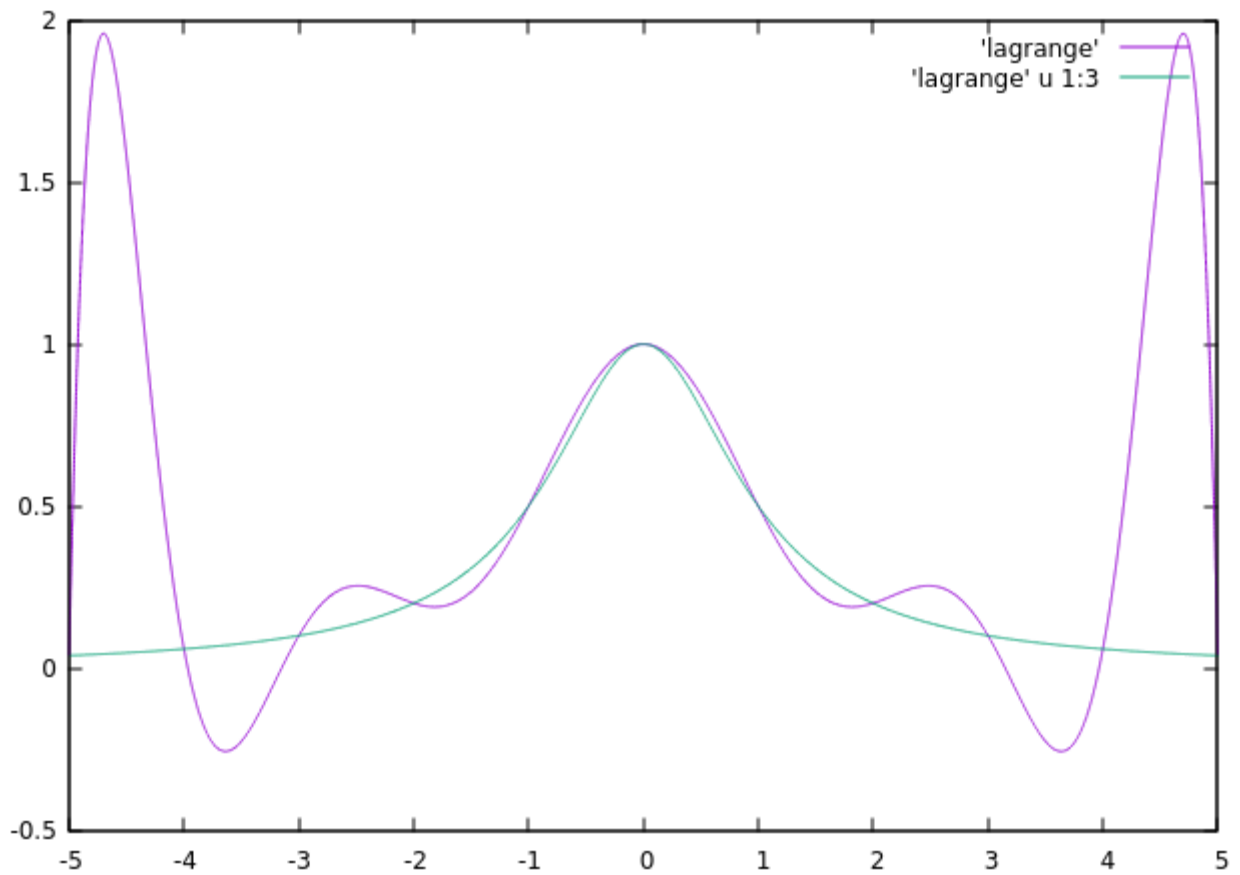
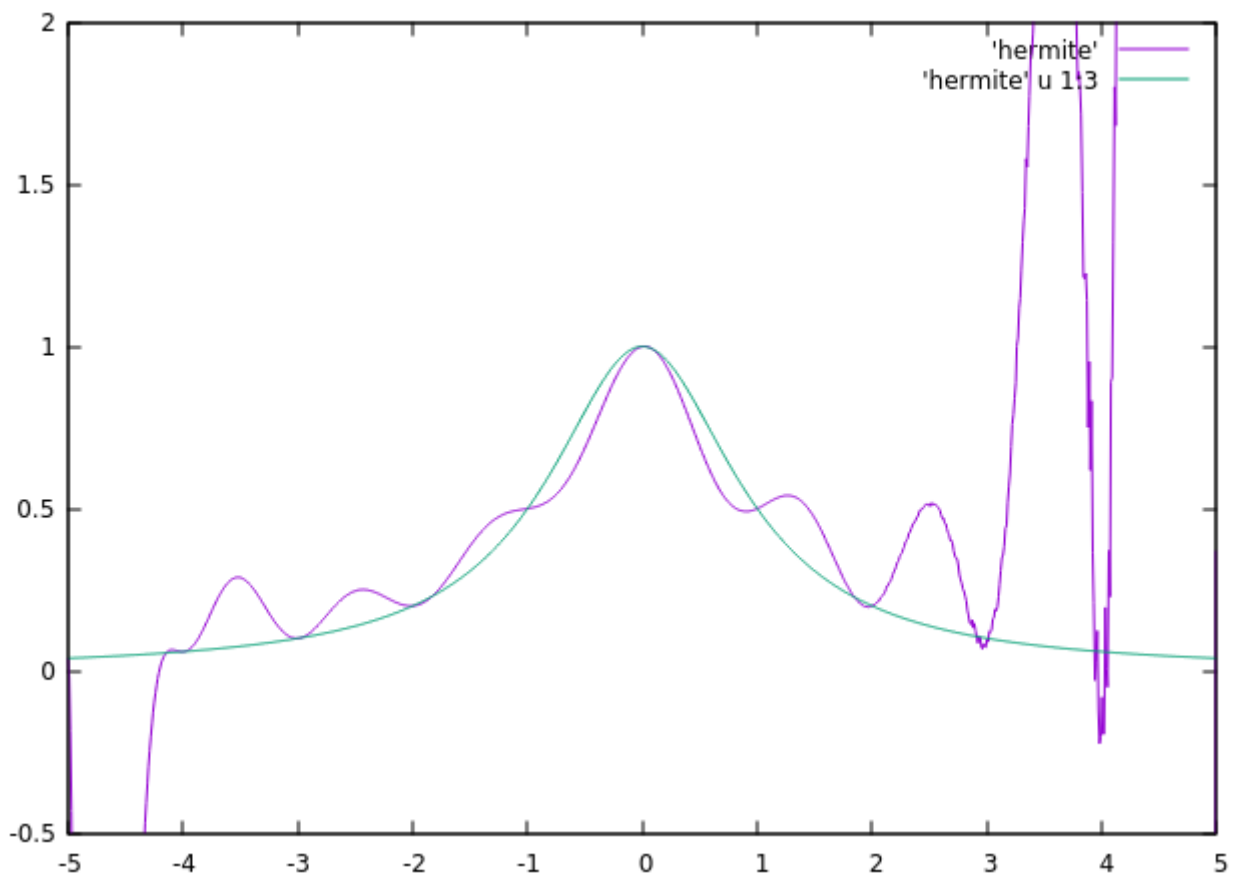


1. Lagrange Interpolation



Hermite Interpolation



2. The solution of " $x - \exp(x) = 0$ " is $x = -34.6183$.

3. $y_{\text{exact}}(1.5) = 0.5118277$.

$y_{\text{forward_diff}}(1.5) = 0.511828$. $\text{Abs_error} = 0.0000003$.

$y_{\text{backward_diff}}(1.5) = 0.451476$. $\text{Abs_error} = 0.0603517$.

Hence, forward difference is a better approximation.

The difference between both approximations is because the point $x=1.5$ is much closer to the forward points than the backward points.