Practical Tip Correction Procedure for Application to Computed Lift
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Induced Flow and Airloads
Often engineers cannot introduce the Prandtl correction in coupling inflow and lift theories. A new correction needs to be applied to the theory such that the lift approaches zero at the tip.

Research Goals and Methods
Our research goal was to determine a simple tip correction using the Prandtl factor for different lifting conditions. In order to accomplish this, we studied graph behavior using MATLAB.

Discussion
The results show the errors between the exact, linear, and approximation of the lift deficiency function. Errors between the exact and approximate range from 0-10%, whereas the errors between the exact and linear range from 10-30%. The new approximation error increases with larger blade pitch parameters (which are less practical in applications).

Future Directions
We proposed a new method for computing the tip loss on rotor blade lift distributions which requires the Prandtl factor k but also includes a quadratic correction factor, which allows for 1/3 of the traditional error when K is set = to k.