Type	Difference Approximation	Truncation Term
Forward	$y'(t_j) \approx \frac{y(t_{j+1})-y(t_j)}{k}$	$\tau_j = -\frac{1}{2}ky''(\eta_j)$
Backward	$y'(t_j) \approx \frac{y(t_j)-y(t_{j-1})}{k}$	$\tau_j = \frac{1}{2}ky''(\eta_j)$
Centered	$y'(t_j) \approx \frac{y(t_{j+1})-y(t_{j-1})}{2k}$	$\tau_j = -\frac{1}{6}k^2y'''(\eta_j)$
One-sided	$y'(t_j) \approx \frac{-y(t_{j+2})+4y(t_{j+1})-3y(t_j)}{2k}$	$\tau_j = \frac{1}{3}k^2y'''(\eta_j)$
One-sided	$y'(t_j) \approx \frac{3y(t_j)-4y(t_{j-1})+y(t_{j-2})}{2k}$	$\tau_j = \frac{1}{3}k^2y'''(\eta_j)$
Centered	$y''(t_j) \approx \frac{y(t_{j+1})-2y(t_j)+y(t_{j-1})}{k^2}$	$\tau_j = -\frac{1}{12}k^2y''''(\eta_j)$

Table 1: Numerical differentiation formulas. These formulas assume equally spaced points with step size $k = t_{j+1} - t_j$, and the point η_j is located between the left- and rightmost points used in the formula.