When solving the initial value problem $y' = f(x,y)$ with the initial condition $y(x_0) = y_0$, we can use the following multi-point methods:

Adams–Bashforth (explicit method)

- $y_{i+1} = y_i + \dfrac{h}{2}\left[3f_i - f_{i-1}\right] + O(h^2)$ 2-point
- $y_{i+1} = y_i + \dfrac{h}{12}\left[23f_i - 16f_{i-1} + 5f_{i-2}\right] + O(h^3)$ 3-point
- $y_{i+1} = y_i + \dfrac{h}{24}\left[55f_i - 59f_{i-1} + 37f_{i-2} - 9f_{i-3}\right] + O(h^4)$ 4-point
- $y_{i+1} = y_i + \dfrac{h}{720}\left[1901f_i - 2774f_{i-1} + 2616f_{i-2} - 1274f_{i-3} + 251f_{i-4}\right] + O(h^5)$ 5-point

Adams–Moulton (implicit method)

- $y_{i+1} = y_i + \dfrac{h}{12}\left[5f_{i+1} + 8f_i - f_{i-1}\right] + O(h^3)$ 2-point
- $y_{i+1} = y_i + \dfrac{h}{24}\left[9f_{i+1} + 19f_i - 5f_{i-1} + f_{i-2}\right] + O(h^4)$ 3-point
- $y_{i+1} = y_i + \dfrac{h}{720}\left[251f_{i+1} + 646f_i - 264f_{i-1} + 106f_{i-2} - 19f_{i-3}\right] + O(h^5)$ 4-point

where $f_i = f(x_i, y_i)$.