

BDF-methods for $k \leq 6$:

$$k = 1: hf_{m+1} = u_{m+1} - u_m$$

$$k = 2: hf_{m+2} = \frac{1}{2}(3u_{m+2} - 4u_{m+1} + u_m)$$

$$k = 3: hf_{m+3} = \frac{1}{6}(11u_{m+3} - 18u_{m+2} + 9u_{m+1} - 2u_m)$$

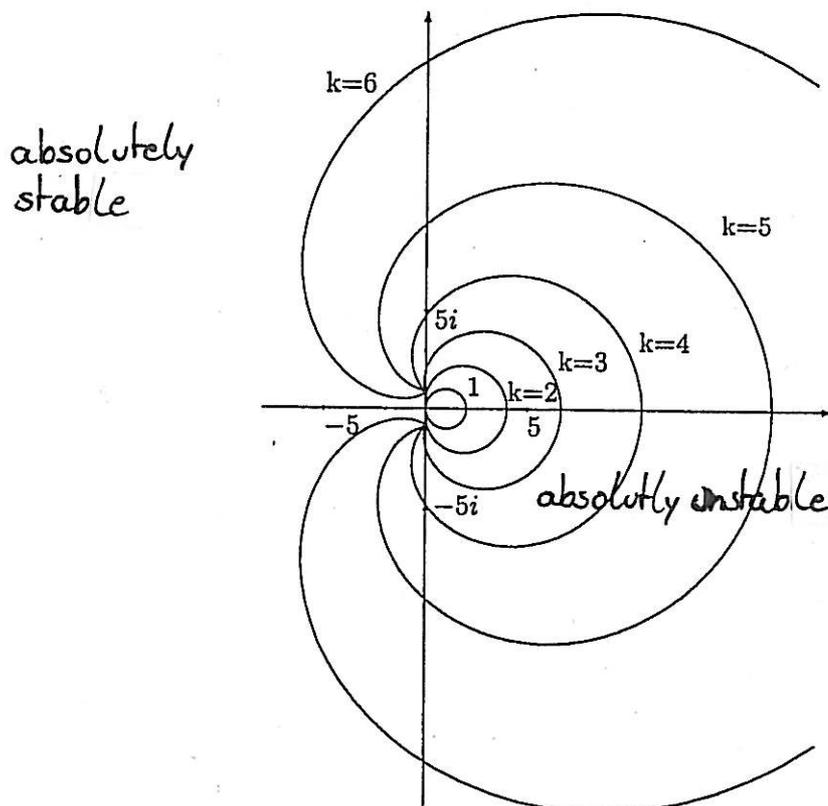
$$k = 4: hf_{m+4} = \frac{1}{12}(25u_{m+4} - 48u_{m+3} + 36u_{m+2} - 16u_{m+1} + 3u_m)$$

$$k = 5: hf_{m+5} = \frac{1}{60}(137u_{m+5} - 300u_{m+4} + 300u_{m+3} - 200u_{m+2} + 75u_{m+1} - 12u_m)$$

$$k = 6: hf_{m+6} = \frac{1}{60}(147u_{m+6} - 360u_{m+5} + 450u_{m+4} - 400u_{m+3} + 225u_{m+2} - 72u_{m+1} + 10u_m)$$

$$f_{m+k} := f(t_{m+k}, u_{m+k})$$

regions of absolute stability



$A(\alpha)$ -stability for

k	1	2	3	4	5	6
α	90°	90°	86.03°	73.35°	51.84°	17.84°