5.3

Waldmann

① $y^{n+1} = y_n + \frac{1}{4}hf(y_n, t_n) + \frac{3}{4}hf\left(y_n + \frac{2}{3}hf(y_n, t_n), t_n + \frac{2}{3}h\right)$

$K_1 = f(y_n, t_n)$

$K_2 = f\left(y_n + \frac{2}{3}hK_1, t_n + \frac{2}{3}h\right)$

$y^{n+1} = y_n + \frac{1}{4}hK_1 + \frac{3}{4}hK_2$

0	0	
2/3	2/3	0
	1/4	3/4

②

0				
1/3	1/3			
2/3	-1/3	1		
1	1	-1	1	
	1/8	3/8	3/8	1/8

$K_1 = f(y_n, t_n)$

$K_2 = f\left(y_n + \frac{h}{3}K_1, t_n + \frac{1}{3}h\right)$

$K_3 = f\left(y_n - \frac{h}{3}K_1 + hK_2, t_n + \frac{2}{3}h\right)$

$K_4 = f(y_n + K_1h - hK_2 + K_3h, t_n + h)$

$y^{n+1} = y_n + \frac{h}{8}K_1 + \frac{3h}{8}K_2 + \frac{3h}{8}K_3 + \frac{h}{8}K_4$