Формула, используемая в этом методе:  
 yn+1 = yn + h\*F(xn , yn),  
где h - размер шага,  
 F(xn, yn) - значение производной.  
  
Вычислим yi :  
y0 = 0

y1 = y0 + h \* (1 + 0.2 \* y0 \* sin(x0) - y02) = 0 + 0.2 \* (1 + 0.2 \* 0 \* sin(0) - 02) ≈ 0.2

y2 = y1 + h \* (1 + 0.2 \* y1 \* sin(x1) - y12) = 0.2 + 0.2 \* (1 + 0.2 \* 0.2 \* sin(0.2) - 0.22) ≈ 0.394

y3 = y2 + h \* (1 + 0.2 \* y2 \* sin(x2) - y22) = 0.394 + 0.2 \* (1 + 0.2 \* 0.394 \* sin(0.4) - 0.3942) ≈ 0.569

y4 = y3 + h \* (1 + 0.2 \* y3 \* sin(x3) - y32) = 0.569 + 0.2 \* (1 + 0.2 \* 0.569 \* sin(0.6) - 0.5692) ≈ 0.717

y5 = y4 + h \* (1 + 0.2 \* y4 \* sin(x4) - y42) = 0.717 + 0.2 \* (1 + 0.2 \* 0.717 \* sin(0.8) - 0.7172) ≈ 0.835

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 |
| yi | 0 | 0.2 | 0.394 | 0.569 | 0.717 | 0.835 |

Формула, используемая в этом методе:  
 yn+1 = yn + h\*F(xn , yn),  
где h - размер шага,  
 F(xn, yn) - значение производной.  
  
Вычислим yi :  
y0 = 0

y1 = y0 + h \* (1 + 0.2 \* y0 \* sin(x0) - y02) = 0 + 0.1 \* (1 + 0.2 \* 0 \* sin(0) - 02) ≈ 0.1

y2 = y1 + h \* (1 + 0.2 \* y1 \* sin(x1) - y12) = 0.1 + 0.1 \* (1 + 0.2 \* 0.1 \* sin(0.1) - 0.12) ≈ 0.199

y3 = y2 + h \* (1 + 0.2 \* y2 \* sin(x2) - y22) = 0.199 + 0.1 \* (1 + 0.2 \* 0.199 \* sin(0.2) - 0.1992) ≈ 0.296

y4 = y3 + h \* (1 + 0.2 \* y3 \* sin(x3) - y32) = 0.296 + 0.1 \* (1 + 0.2 \* 0.296 \* sin(0.3) - 0.2962) ≈ 0.389

y5 = y4 + h \* (1 + 0.2 \* y4 \* sin(x4) - y42) = 0.389 + 0.1 \* (1 + 0.2 \* 0.389 \* sin(0.4) - 0.3892) ≈ 0.477

y6 = y5 + h \* (1 + 0.2 \* y5 \* sin(x5) - y52) = 0.477 + 0.1 \* (1 + 0.2 \* 0.477 \* sin(0.5) - 0.4772) ≈ 0.559

y7 = y6 + h \* (1 + 0.2 \* y6 \* sin(x6) - y62) = 0.559 + 0.1 \* (1 + 0.2 \* 0.559 \* sin(0.6) - 0.5592) ≈ 0.634

y8 = y7 + h \* (1 + 0.2 \* y7 \* sin(x7) - y72) = 0.634 + 0.1 \* (1 + 0.2 \* 0.634 \* sin(0.7) - 0.6342) ≈ 0.702

y9 = y8 + h \* (1 + 0.2 \* y8 \* sin(x8) - y82) = 0.702 + 0.1 \* (1 + 0.2 \* 0.702 \* sin(0.8) - 0.7022) ≈ 0.763

y10 = y9 + h \* (1 + 0.2 \* y9 \* sin(x9) - y92) = 0.763 + 0.1 \* (1 + 0.2 \* 0.763 \* sin(0.9) - 0.7632) ≈ 0.817

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| yi | 0 | 0.1 | 0.199 | 0.296 | 0.389 | 0.477 | 0.559 | 0.634 | 0.702 | 0.763 | 0.817 |

Формулы, используемые в этом методе:  
 y`i = yi-1 + h \* F(xi-1, yi-1),  
где y`i - первое значение производной,  
 h - размер шага,  
 F(xi-1, yi-1) - предыдущее значение производной;  
  
 yi = yi-1 + h \* 0.5 \* (F(xi, y`i) + F(xi-1, yi-1))  
где yi - значение производной после пересчёта,  
 F(xi, y`i) - значение производной от первого значения производной,  
 F(xi-1, yi-1) - предыдущее значение производной.  
  
Вычислим yi:  
y0 =0

y`1 = y0 + h \* F(x0, y0) = 0 + 0.2 \* F(0, 0) ≈ 0.2

y1 = y0 + h \* 0.5 \* (F(x1, y`1) + F(x0, y0)) = 0 + 0.2 \* 0.5 \* (F(0.2, 0.2) + F(0, 0)) =  
 = 0 + 0.2 \* 0.5 \* (0.968 + 1.0) ≈ 0.197

y`2 = y1 + h \* F(x1, y1) = 0.197 + 0.2 \* F(0.2, 0.197) ≈ 0.391

y2 = y1 + h \* 0.5 \* (F(x2, y`2) + F(x1, y1)) = 0.197 + 0.2 \* 0.5 \* (F(0.4, 0.391) + F(0.2, 0.197)) =  
 = 0.197 + 0.2 \* 0.5 \* (0.878 + 0.969) ≈ 0.382

y`3 = y2 + h \* F(x2, y2) = 0.382 + 0.2 \* F(0.4, 0.382) ≈ 0.559

y3 = y2 + h \* 0.5 \* (F(x3, y`3) + F(x2, y2)) = 0.382 + 0.2 \* 0.5 \* (F(0.6, 0.559) + F(0.4, 0.382)) =  
 = 0.382 + 0.2 \* 0.5 \* (0.751 + 0.884) ≈ 0.545

y`4 = y3 + h \* F(x3, y3) = 0.545 + 0.2 \* F(0.6, 0.545) ≈ 0.698

y4 = y3 + h \* 0.5 \* (F(x4, y`4) + F(x3, y3)) = 0.545 + 0.2 \* 0.5 \* (F(0.8, 0.698) + F(0.6, 0.545)) =  
 = 0.545 + 0.2 \* 0.5 \* (0.613 + 0.765) ≈ 0.683

y`5 = y4 + h \* F(x4, y4) = 0.683 + 0.2 \* F(0.8, 0.683) ≈ 0.809

y5 = y4 + h \* 0.5 \* (F(x5, y`5) + F(x4, y4)) = 0.683 + 0.2 \* 0.5 \* (F(1.0, 0.809) + F(0.8, 0.683)) =  
 = 0.683 + 0.2 \* 0.5 \* (0.482 + 0.632) ≈ 0.794

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 |
| yi' | 0 | 0.2 | 0.391 | 0.559 | 0.698 | 0.809 |
| yi | 0 | 0.197 | 0.382 | 0.545 | 0.683 | 0.794 |

Формулы, используемые в этом методе:  
 y`i = yi-1 + h \* F(xi-1, yi-1),  
где y`i - первое значение производной,  
 h - размер шага,  
 F(xi-1, yi-1) - предыдущее значение производной;  
  
 yi = yi-1 + h \* 0.5 \* (F(xi, y`i) + F(xi-1, yi-1))  
где yi - значение производной после пересчёта,  
 F(xi, y`i) - значение производной от первого значения производной,  
 F(xi-1, yi-1) - предыдущее значение производной.  
  
Вычислим yi:  
y0 =0

y`1 = y0 + h \* F(x0, y0) = 0 + 0.1 \* F(0, 0) ≈ 0.1

y1 = y0 + h \* 0.5 \* (F(x1, y`1) + F(x0, y0)) = 0 + 0.1 \* 0.5 \* (F(0.1, 0.1) + F(0, 0)) =  
 = 0 + 0.1 \* 0.5 \* (0.992 + 1.0) ≈ 0.1

y`2 = y1 + h \* F(x1, y1) = 0.1 + 0.1 \* F(0.1, 0.1) ≈ 0.199

y2 = y1 + h \* 0.5 \* (F(x2, y`2) + F(x1, y1)) = 0.1 + 0.1 \* 0.5 \* (F(0.2, 0.199) + F(0.1, 0.1)) =  
 = 0.1 + 0.1 \* 0.5 \* (0.968 + 0.992) ≈ 0.198

y`3 = y2 + h \* F(x2, y2) = 0.198 + 0.1 \* F(0.2, 0.198) ≈ 0.295

y3 = y2 + h \* 0.5 \* (F(x3, y`3) + F(x2, y2)) = 0.198 + 0.1 \* 0.5 \* (F(0.3, 0.295) + F(0.2, 0.198)) =  
 = 0.198 + 0.1 \* 0.5 \* (0.93 + 0.969) ≈ 0.293

y`4 = y3 + h \* F(x3, y3) = 0.293 + 0.1 \* F(0.3, 0.293) ≈ 0.386

y4 = y3 + h \* 0.5 \* (F(x4, y`4) + F(x3, y3)) = 0.293 + 0.1 \* 0.5 \* (F(0.4, 0.386) + F(0.3, 0.293)) =  
 = 0.293 + 0.1 \* 0.5 \* (0.881 + 0.931) ≈ 0.384

y`5 = y4 + h \* F(x4, y4) = 0.384 + 0.1 \* F(0.4, 0.384) ≈ 0.472

y5 = y4 + h \* 0.5 \* (F(x5, y`5) + F(x4, y4)) = 0.384 + 0.1 \* 0.5 \* (F(0.5, 0.472) + F(0.4, 0.384)) =  
 = 0.384 + 0.1 \* 0.5 \* (0.822 + 0.882) ≈ 0.469

y`6 = y5 + h \* F(x5, y5) = 0.469 + 0.1 \* F(0.5, 0.469) ≈ 0.551

y6 = y5 + h \* 0.5 \* (F(x6, y`6) + F(x5, y5)) = 0.469 + 0.1 \* 0.5 \* (F(0.6, 0.551) + F(0.5, 0.469)) =  
 = 0.469 + 0.1 \* 0.5 \* (0.759 + 0.825) ≈ 0.548

y`7 = y6 + h \* F(x6, y6) = 0.548 + 0.1 \* F(0.6, 0.548) ≈ 0.624

y7 = y6 + h \* 0.5 \* (F(x7, y`7) + F(x6, y6)) = 0.548 + 0.1 \* 0.5 \* (F(0.7, 0.624) + F(0.6, 0.548)) =  
 = 0.548 + 0.1 \* 0.5 \* (0.691 + 0.762) ≈ 0.621

y`8 = y7 + h \* F(x7, y7) = 0.621 + 0.1 \* F(0.7, 0.621) ≈ 0.69

y8 = y7 + h \* 0.5 \* (F(x8, y`8) + F(x7, y7)) = 0.621 + 0.1 \* 0.5 \* (F(0.8, 0.69) + F(0.7, 0.621)) =  
 = 0.621 + 0.1 \* 0.5 \* (0.623 + 0.694) ≈ 0.687

y`9 = y8 + h \* F(x8, y8) = 0.687 + 0.1 \* F(0.8, 0.687) ≈ 0.75

y9 = y8 + h \* 0.5 \* (F(x9, y`9) + F(x8, y8)) = 0.687 + 0.1 \* 0.5 \* (F(0.9, 0.75) + F(0.8, 0.687)) =  
 = 0.687 + 0.1 \* 0.5 \* (0.555 + 0.627) ≈ 0.746

y`10 = y9 + h \* F(x9, y9) = 0.746 + 0.1 \* F(0.9, 0.746) ≈ 0.802

y10 = y9 + h \* 0.5 \* (F(x10, y`10) + F(x9, y9)) = 0.746 + 0.1 \* 0.5 \* (F(1.0, 0.802) + F(0.9, 0.746)) =  
 = 0.746 + 0.1 \* 0.5 \* (0.492 + 0.56) ≈ 0.799

Формулы, используемые в этом методе:  
 yi+1 = yi + h/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4),  
где yi+1 - искомое значение производной в точке,  
 ki - коэффициенты;  
  
 ki1 = F(xi, yi),  
 ki2 = F(xi + h/2, yi + h/2\*ki1),  
 ki3 = F(xi + h/2, yi + h/2\*ki2),  
 ki4 = F(xi + h, yi + h\*ki3).  
  
Вычислим yi:  
y0 =0

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| yi' | 0 | 0.1 | 0.199 | 0.295 | 0.386 | 0.472 | 0.551 | 0.624 | 0.69 | 0.75 | 0.802 |
| yi | 0 | 0.1 | 0.198 | 0.293 | 0.384 | 0.469 | 0.548 | 0.621 | 0.687 | 0.746 | 0.799 |

k1 = F(x0 , y0) = 1 + 0.2 \* 0 \* sin(0) - 02 ≈ 1.0

k2 = F(xi + 0.1, y0 + 0.1\*k01) = 1 + 0.2 \* 0.1 \* sin(0.1) - 0.12 ≈ 0.992

k3 = F(xi + 0.1, y0 + 0.1\*k2) = 1 + 0.2 \* 0.0992 \* sin(0.1) - 0.09922 ≈ 0.9921

k4 = F(xi + 0.2, y0 + 0.2\*k03) = 1 + 0.2 \* 0.1984 \* sin(0.2) - 0.19842 ≈ 0.9685

y1 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0 + 0.2/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.1979

k1 = F(x1 , y1) = 1 + 0.2 \* 0.1979 \* sin(0.2) - 0.19792 ≈ 0.9687

k2 = F(xi + 0.1, y1 + 0.1\*k11) = 1 + 0.2 \* 0.2948 \* sin(0.3) - 0.29482 ≈ 0.9305

k3 = F(xi + 0.1, y1 + 0.1\*k2) = 1 + 0.2 \* 0.2909 \* sin(0.3) - 0.29092 ≈ 0.9325

k4 = F(xi + 0.2, y1 + 0.2\*k13) = 1 + 0.2 \* 0.3844 \* sin(0.4) - 0.38442 ≈ 0.8822

y2 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.1979 + 0.2/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.3838

k1 = F(x2 , y2) = 1 + 0.2 \* 0.3838 \* sin(0.4) - 0.38382 ≈ 0.8826

k2 = F(xi + 0.1, y2 + 0.1\*k21) = 1 + 0.2 \* 0.4721 \* sin(0.5) - 0.47212 ≈ 0.8224

k3 = F(xi + 0.1, y2 + 0.1\*k2) = 1 + 0.2 \* 0.466 \* sin(0.5) - 0.4662 ≈ 0.8275

k4 = F(xi + 0.2, y2 + 0.2\*k23) = 1 + 0.2 \* 0.5493 \* sin(0.6) - 0.54932 ≈ 0.7603

y3 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.3838 + 0.2/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.5486

k1 = F(x3 , y3) = 1 + 0.2 \* 0.5486 \* sin(0.6) - 0.54862 ≈ 0.761

k2 = F(xi + 0.1, y3 + 0.1\*k31) = 1 + 0.2 \* 0.6247 \* sin(0.7) - 0.62472 ≈ 0.6902

k3 = F(xi + 0.1, y3 + 0.1\*k2) = 1 + 0.2 \* 0.6176 \* sin(0.7) - 0.61762 ≈ 0.6981

k4 = F(xi + 0.2, y3 + 0.2\*k33) = 1 + 0.2 \* 0.6882 \* sin(0.8) - 0.68822 ≈ 0.6251

y4 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.5486 + 0.2/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.6874

k1 = F(x4 , y4) = 1 + 0.2 \* 0.6874 \* sin(0.8) - 0.68742 ≈ 0.6261

k2 = F(xi + 0.1, y4 + 0.1\*k41) = 1 + 0.2 \* 0.75 \* sin(0.9) - 0.752 ≈ 0.555

k3 = F(xi + 0.1, y4 + 0.1\*k2) = 1 + 0.2 \* 0.7429 \* sin(0.9) - 0.74292 ≈ 0.5645

k4 = F(xi + 0.2, y4 + 0.2\*k43) = 1 + 0.2 \* 0.8003 \* sin(1.0) - 0.80032 ≈ 0.4942

y5 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.6874 + 0.2/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.7994

Формулы, используемые в этом методе:  
 yi+1 = yi + h/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4),  
где yi+1 - искомое значение производной в точке,  
 ki - коэффициенты;  
  
 ki1 = F(xi, yi),  
 ki2 = F(xi + h/2, yi + h/2\*ki1),  
 ki3 = F(xi + h/2, yi + h/2\*ki2),  
 ki4 = F(xi + h, yi + h\*ki3).  
  
Вычислим yi:  
y0 =0

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 |
| yi | 0 | 0.1979 | 0.3838 | 0.5486 | 0.6874 | 0.7994 |

k1 = F(x0 , y0) = 1 + 0.2 \* 0 \* sin(0) - 02 ≈ 1.0

k2 = F(xi + 0.05, y0 + 0.05\*k01) = 1 + 0.2 \* 0.05 \* sin(0.05) - 0.052 ≈ 0.998

k3 = F(xi + 0.05, y0 + 0.05\*k2) = 1 + 0.2 \* 0.0499 \* sin(0.05) - 0.04992 ≈ 0.998

k4 = F(xi + 0.1, y0 + 0.1\*k03) = 1 + 0.2 \* 0.0998 \* sin(0.1) - 0.09982 ≈ 0.992

y1 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.0997

k1 = F(x1 , y1) = 1 + 0.2 \* 0.0997 \* sin(0.1) - 0.09972 ≈ 0.9921

k2 = F(xi + 0.05, y1 + 0.05\*k11) = 1 + 0.2 \* 0.1493 \* sin(0.15) - 0.14932 ≈ 0.9822

k3 = F(xi + 0.05, y1 + 0.05\*k2) = 1 + 0.2 \* 0.1488 \* sin(0.15) - 0.14882 ≈ 0.9823

k4 = F(xi + 0.1, y1 + 0.1\*k13) = 1 + 0.2 \* 0.1979 \* sin(0.2) - 0.19792 ≈ 0.9687

y2 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.0997 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.1979

k1 = F(x2 , y2) = 1 + 0.2 \* 0.1979 \* sin(0.2) - 0.19792 ≈ 0.9687

k2 = F(xi + 0.05, y2 + 0.05\*k21) = 1 + 0.2 \* 0.2463 \* sin(0.25) - 0.24632 ≈ 0.9515

k3 = F(xi + 0.05, y2 + 0.05\*k2) = 1 + 0.2 \* 0.2455 \* sin(0.25) - 0.24552 ≈ 0.9519

k4 = F(xi + 0.1, y2 + 0.1\*k23) = 1 + 0.2 \* 0.2931 \* sin(0.3) - 0.29312 ≈ 0.9314

y3 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.1979 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.293

k1 = F(x3 , y3) = 1 + 0.2 \* 0.293 \* sin(0.3) - 0.2932 ≈ 0.9315

k2 = F(xi + 0.05, y3 + 0.05\*k31) = 1 + 0.2 \* 0.3396 \* sin(0.35) - 0.33962 ≈ 0.908

k3 = F(xi + 0.05, y3 + 0.05\*k2) = 1 + 0.2 \* 0.3384 \* sin(0.35) - 0.33842 ≈ 0.9087

k4 = F(xi + 0.1, y3 + 0.1\*k33) = 1 + 0.2 \* 0.3839 \* sin(0.4) - 0.38392 ≈ 0.8825

y4 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.293 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.3838

k1 = F(x4 , y4) = 1 + 0.2 \* 0.3838 \* sin(0.4) - 0.38382 ≈ 0.8826

k2 = F(xi + 0.05, y4 + 0.05\*k41) = 1 + 0.2 \* 0.4279 \* sin(0.45) - 0.42792 ≈ 0.8541

k3 = F(xi + 0.05, y4 + 0.05\*k2) = 1 + 0.2 \* 0.4265 \* sin(0.45) - 0.42652 ≈ 0.8552

k4 = F(xi + 0.1, y4 + 0.1\*k43) = 1 + 0.2 \* 0.4693 \* sin(0.5) - 0.46932 ≈ 0.8247

y5 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.3838 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.4692

k1 = F(x5 , y5) = 1 + 0.2 \* 0.4692 \* sin(0.5) - 0.46922 ≈ 0.8248

k2 = F(xi + 0.05, y5 + 0.05\*k51) = 1 + 0.2 \* 0.5104 \* sin(0.55) - 0.51042 ≈ 0.7928

k3 = F(xi + 0.05, y5 + 0.05\*k2) = 1 + 0.2 \* 0.5088 \* sin(0.55) - 0.50882 ≈ 0.7943

k4 = F(xi + 0.1, y5 + 0.1\*k53) = 1 + 0.2 \* 0.5486 \* sin(0.6) - 0.54862 ≈ 0.761

y6 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.4692 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.5485

k1 = F(x6 , y6) = 1 + 0.2 \* 0.5485 \* sin(0.6) - 0.54852 ≈ 0.7611

k2 = F(xi + 0.05, y6 + 0.05\*k61) = 1 + 0.2 \* 0.5866 \* sin(0.65) - 0.58662 ≈ 0.7269

k3 = F(xi + 0.05, y6 + 0.05\*k2) = 1 + 0.2 \* 0.5848 \* sin(0.65) - 0.58482 ≈ 0.7287

k4 = F(xi + 0.1, y6 + 0.1\*k63) = 1 + 0.2 \* 0.6214 \* sin(0.7) - 0.62142 ≈ 0.694

y7 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.5485 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.6213

k1 = F(x7 , y7) = 1 + 0.2 \* 0.6213 \* sin(0.7) - 0.62132 ≈ 0.694

k2 = F(xi + 0.05, y7 + 0.05\*k71) = 1 + 0.2 \* 0.656 \* sin(0.75) - 0.6562 ≈ 0.6591

k3 = F(xi + 0.05, y7 + 0.05\*k2) = 1 + 0.2 \* 0.6543 \* sin(0.75) - 0.65432 ≈ 0.6611

k4 = F(xi + 0.1, y7 + 0.1\*k73) = 1 + 0.2 \* 0.6874 \* sin(0.8) - 0.68742 ≈ 0.6261

y8 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.6213 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.6873

k1 = F(x8 , y8) = 1 + 0.2 \* 0.6873 \* sin(0.8) - 0.68732 ≈ 0.6262

k2 = F(xi + 0.05, y8 + 0.05\*k81) = 1 + 0.2 \* 0.7186 \* sin(0.85) - 0.71862 ≈ 0.5916

k3 = F(xi + 0.05, y8 + 0.05\*k2) = 1 + 0.2 \* 0.7169 \* sin(0.85) - 0.71692 ≈ 0.5938

k4 = F(xi + 0.1, y8 + 0.1\*k83) = 1 + 0.2 \* 0.7467 \* sin(0.9) - 0.74672 ≈ 0.5594

y9 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.6873 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.7466

k1 = F(x9 , y9) = 1 + 0.2 \* 0.7466 \* sin(0.9) - 0.74662 ≈ 0.5596

k2 = F(xi + 0.05, y9 + 0.05\*k91) = 1 + 0.2 \* 0.7746 \* sin(0.95) - 0.77462 ≈ 0.526

k3 = F(xi + 0.05, y9 + 0.05\*k2) = 1 + 0.2 \* 0.7729 \* sin(0.95) - 0.77292 ≈ 0.5284

k4 = F(xi + 0.1, y9 + 0.1\*k93) = 1 + 0.2 \* 0.7994 \* sin(1.0) - 0.79942 ≈ 0.4954

y10 = y + h/6\*(k1 + 2\*k2 + 2\*k3 + k4) = 0.7466 + 0.1/6\*(ki1 + 2\*ki2 + 2\*ki3 + ki4) ≈ 0.7993

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| xi | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| yi | 0 | 0.0997 | 0.1979 | 0.293 | 0.3838 | 0.4692 | 0.5485 | 0.6213 | 0.6873 | 0.7466 | 0.7993 |