

(d) Design an algorithm for Runge-Kutta method.

step 1: enter x_0 , y_0 , $f(x, y)$, step size h , y_0 .

step 2: enter n , no. of iterations.

step 3: for $i = 1$ to n , step 1.

step 4: $R_1 = h f(x_0, y_0)$

$$R_2 = h f\left(x_0 + \frac{h}{2}, y_0 + \frac{R_1}{2}\right)$$

$$R_3 = h f\left(x_0 + \frac{h}{2}, y_0 + \frac{R_2}{2}\right)$$

$$R_4 = h f\left(x_0 + h, y_0 + R_3\right)$$

step 5: $y = y_0 + \frac{1}{6} (R_1 + 2R_2 + 2R_3 + R_4)$

step 6: $x_0 = x_0 + h$.

$$y_0 = y.$$

step 7: end for.

step 8: Print x_0, y_0 .