

```
function [t, w] = RK38(f, a, b, N, alpha)

    syms t y

    h = (b - a)/N;
    t(1) = a;
    w(1) = alpha;

    for i = 1:N

        K1 = h*f(t(i), w(i));
        K2 = h*f(t(i) + (1/3)*h, w(i) + (1/3)*K1);
        K3 = h*f(t(i) + (2/3)*h, w(i) - (1/3)*K1 + K2);
        K4 = h*f(t(i) + h, w(i) + K1 - K2 + K3);

        w(i+1) = w(i) + (1/8)*(K1 + 3*K2 + 3*K3 + K4);
        t(i+1) = a + i*h;

    end

end
```