In [3]:
```
∫_dt(u::Taylor1) = integrate(u) # the symbol ∫ is obtained as \int<TAB>

function taylor_step(f, u0)

    u = copy(u0)
    unew = u0 + ∫_dt(f(u))

    while unew != u
        u = unew
        unew = u0 + ∫_dt(f(u))    # Picard iteration
    end

    return u
end

f(x) = x  # Differential equation

order = 20  # maximum order of the Taylor expansion for the solution

u0 = Taylor1([1.0], order)  # initial condition given as a Taylor expansion

solution = taylor_step(f, u0);    # solution

solution(1.0) - exp(1.0) # compare the solution evaluated at t=1 with the exact value
```

Out[3]:
```
0.0
```