Homeworks for 11th and 12th week

1. Find the solution of the equation
$$y' = \frac{(2x+1)y}{x^2 + x}$$

   with initial condition

   (a) $y(-\frac{1}{2}) = 0$
   (b) $y(1) = 2$
   (c) $y(-\frac{1}{2}) = 1$

2. Find the general solution of the differential equation $y' + y \cos x = 0$

3. Using Euler's method with step $h = 0{,}5$ approximate function value $y(2,5)$ of the function y which is a solution of the differential eqution
$$y' = -\frac{y}{x} - 2y^2$$

   with initial condition $y(1) = 1$.

Recommended excercises

1. Find the solution of the differential equation
$$y' = \frac{e^{-y}}{x}$$

   with initial condition $y(1) = 0$.

2. Find the solution of the differential equation
$$y' = 6x^2\sqrt{y}$$

   with initial condition $y(1) = 4$.

3. Find the general solution of the differential equation
$$y' - \frac{y}{x} = xe^x$$