$y' = f(x,y)$ $y'(x) = f(x,y(x))$

$y_i' = f[x_i, y(x)]$ $\underbrace{\quad}_{f_i}$

$f_i = \dfrac{y_{i+1}-y_i}{x_{i+1}-x_i}$

$f_i \cdot (x_{i+1}-x_i) = y_{i+1}-y_i$

$y_{i+1} = y_i + f_i \cdot (x_{i+1}x_i) = y_i + f \cdot \Delta x$

wzór Eulera

$y' = -y^2$

$y(0) = 1$ $t=0 \quad y_0=1$

$\dfrac{dy}{dt} = -y^2$

$\int -\dfrac{1}{y^2}\,dy = \int dt$

$\dfrac{1}{y} = t + c$

$y = \dfrac{1}{t+c}$

$y_0 = \dfrac{1}{t+c}$

$1 = \dfrac{1}{0+c} \Rightarrow c = 1$

$y = \dfrac{1}{t+c}$

$\Delta t = 0,1$

i	t_i	y; m. eulera	y; rozw. analityczne $\dfrac{1}{t_i+1}$
0	0	1	1
1	0,1	$y_1 = y_0 + f_0 \cdot t = 1+(-1)^2 \cdot 0,1 = 1-0,1 = 0,9$	$\dfrac{1}{0,1+1} = \dfrac{1}{1,1} = 0,9(09)$
2	0,2	$y_2 = y_1 + f_1 \cdot t = 0,9+(0,9)^2 \cdot 0,1 = 0,819$	$\dfrac{1}{0,2+1} = \dfrac{1}{1,2} = 0,8(3)$
3	0,3	$y_3 = y_2 + f_2 \cdot t = 0,819-0,819^2 \cdot 0,1 = 0,75492$	$\dfrac{1}{0,3+1} = \dfrac{1}{1,3} = 0,7692370$

$\left. \begin{array}{l} 0,625 \times 2 = 1,25 \quad \Rightarrow 1 \\ 0,25 \times 2 = 0,5 \quad \Rightarrow 0 \\ 0,5 \times 2 = 1 \quad \Rightarrow 1 \end{array} \right\} \; 0,101$

$\left. \begin{array}{l} 0,29\,0,625 \cdot 2 = 0,7845 \Rightarrow 0 \\ 0,78(25 \cdot 2 = 1,5\,625 \Rightarrow 1 \\ 0,5625 \cdot 2 = 1,125 \Rightarrow 1 \\ 0,125 \cdot 2 = 0,25 \Rightarrow 0 \\ 0,25 \cdot 2 = 0,5 \Rightarrow 0 \\ 0,5 \cdot 2 = 1 \Rightarrow 1 \end{array} \right\} \; 0,011001$