Příklad 1. Najděte obecné řešení zadané diferenciální rovnice. Poté najděte řešení celé počáteční úlohy.

a) $\begin{cases} y' = \dfrac{y^2 - y}{t} \\ y(1) = 2 \end{cases}$

b) $\begin{cases} \dfrac{y'}{y+1} = -4t^3 \\ y(0) = 0 \end{cases}$

c) $\begin{cases} 3y' = \dfrac{1}{y^2} \\ y(2) = 1 \end{cases}$

d) $\begin{cases} y' = \mathrm{e}^{t-y} \\ y(0) = \ln 4 \end{cases}$

e) $\begin{cases} y' = \dfrac{y^2}{t^2} \\ y(-1) = -\frac{1}{2} \end{cases}$

f) $\begin{cases} y' = \dfrac{2ty}{t^2 - 4} \\ y(1) = -6 \end{cases}$

g) $\begin{cases} yy' = -t \\ y(4) = -3 \end{cases}$

h) $\begin{cases} \dfrac{2y'}{1 - y^2} = \dfrac{2}{t} \\ y(1) = -\frac{5}{3} \end{cases}$

i) $\begin{cases} \dfrac{y'}{2\sqrt{y}} = \mathrm{e}^t \\ y(2) = \mathrm{e}^4 - 4\,\mathrm{e}^2 + 4 \end{cases}$

j) $\begin{cases} y' = \dfrac{(y+2)\cos t}{\sin t + 2} \\ y(0) = 0 \end{cases}$

k) $\begin{cases} y' = -2t^3 y^3 \\ y(5) = \frac{1}{\sqrt{621}} \end{cases}$

l) $\begin{cases} \dfrac{\mathrm{e}^y\, y'}{\mathrm{e}^y - 1} = \dfrac{4}{t} \\ y(1) = \ln 2 \end{cases}$

m) $\begin{cases} y' - y^2 = 1 \\ y(\pi) = 0 \end{cases}$

n) $\begin{cases} \dfrac{y'}{y} = -\dfrac{1}{t} \\ y(-2) = -3 \end{cases}$

o) $\begin{cases} 2y' + 1 = y^2 \\ y(1) = \frac{1+2\,\mathrm{e}}{1-2\,\mathrm{e}} \end{cases}$

p) $\begin{cases} \dfrac{y'}{y-1} = \dfrac{3}{t} \\ y(1) = 2 \end{cases}$

q) $\begin{cases} \dfrac{y'}{y-1} = -\dfrac{y}{t} \\ y(2) = -1 \end{cases}$

r) $\begin{cases} 2\sqrt{t}y' = y^2 \\ y(9) = -1 \end{cases}$

s) $\begin{cases} \dfrac{y'}{y+1} = \dfrac{\cos t}{\sin t} \\ y(\frac{\pi}{2}) = 1 \end{cases}$

t) $\begin{cases} y' = \dfrac{\mathrm{e}^{-y}}{t} \\ y(1) = 0 \end{cases}$