

# Diferenciální rovnice

1)  $(1+e^x) \cdot y' + e^x \cdot y = 0$   $[y = \frac{e}{1+e^x} \quad c \in \mathbb{R}]$

2)  $y'' + y' - 2y = 0$   $[y = c_1 \cdot e^x + c_2 \cdot e^{-2x}]$

3)  $y' = \frac{2x-1}{x^2} \cdot y$   $[y = c \cdot x^2 \cdot e^{\frac{1}{x}} \quad c \in \mathbb{R}]$

4)  $y'' + 2y' = 0$   $[y = c_1 + c_2 \cdot e^{-2x}]$

5)  $y' + 7y = 0$   $[y = c_1 \cdot e^{-7x}]$

6)  $y' = 2\sqrt{y} \cdot \ln x$   $y(1) = 1 \leftarrow \text{poč. podmínka}$   
 $[y = (x \ln x - x + 1)^2]$

7)  $y' = e^x \cdot y$   $[y = c \cdot e^{e^x}]$

8)  $y'' - 6y' + 9y = 0$   $[y = c_1 \cdot e^{3x} + c_2 \cdot x \cdot e^{3x}]$

9)  $y'' + y = 0$   $[y = c_1 \cdot \sin x + c_2 \cdot \cos x]$

10)  $2y - x^3 \cdot y' = 0$   $[y = c \cdot e^{-\frac{1}{x^2}} \quad c \in \mathbb{R}]$

11)  $y' + xy = y$   $[y = c \cdot e^{x - \frac{x^2}{2}}]$

12)  $y' - y = 0$   $[y = c \cdot e^x]$

13)  $y'' - 10y' + 29y = 0$   $[y = c_1 \cdot e^{5x} \cos 2x + c_2 \cdot e^{5x} \sin 2x]$

14)  $y' = x^2(1+y^2)$   $[y = \frac{1}{\sqrt{3}} (\frac{x^3}{3} + c)]$