Řešte diferenciální rovnice:

1) $y' - 2y = x^2 + x$ $\quad [y = -\frac{1}{2}(x+1)^2 + c \cdot e^{2x}]$

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

3) $y' + y = e^{-x}$ $\quad [y = (x+c) \cdot e^{-x}]$

4) $y'' + 3y' - 4y = e^{-4x}$ $\quad [y = -\frac{x}{5}e^{-4x} + c_1 e^x + c_2 e^{-4x}]$

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

6) $y'' - 3y' - 4y = 2e^{-x}$ $\quad [y = -\frac{2}{5}xe^{-x} + c_1 e^{4x} + c_2 e^{-x}]$

7) $y'' + y = e^{-x}$ $\quad [y = \frac{1}{2}e^{-x} + c_1 \cos x + c_2 \sin x]$

8) $y'' - 4y' + 4y = x^2$ $\quad [y = \frac{1}{8}(2x^2 + 4x + 3) + c_1 e^{2x} + c_2 \cdot x \cdot e^{2x}]$

9) $y'' - 3y' = 2e^x$ $\quad y(0) = 1 \quad y'(0) = 2$

$[y = -e^x - 1 + e^{3x}]$

10) $y'' - y = 2x$ $\quad y(0) = 1 \quad y'(0) = -2$

$[y = -2x + \frac{1}{2}(e^x + e^{-x})]$

11) $y'' + y' = 3$ $\quad y(0) = 1 \quad y'(0) = 0$

$[y = 3x - 2 + 3e^{-x}]$