SOUSTAVY LINEÁRNÍCH DIFERENCIÁLNÍCH ROVNIC

**1.** $z' + y = 0$, $z' - y' = 3z + y$

**2.** $y' = z - y + e^x$, $z' = -z + y + e^x$

**3.** $y' - z + y = 0$, $z' + 3z + y = 0$, $y(0) = z(0) = 1$

**4.** $y' + 2z + 5y = 0$, $z' = y - 7z$

**5.** $y' = z - 5y + e^{-2x}$, $z' = 2y - 5z + e^x$

**6.** $z'' + y' + z = e^x$, $z' + y'' = 1$

**7.** $u' = w + v - u$, $v' = w + u - v$, $w' = u + v + w$, $(u(0) = 1, v(0) = w(0) = 0)$

**8.** $u' = v + w$, $v' = u + w$, $w' = u + v$, $(u(0) = -1, v(0) = 1, w(0) = 0)$

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VÝSLEDKY. **1.** $z = ae^x + be^{-3x}$, $y = -ae^x + 3be^{-3x}$ **2.** $z = e^x + c + de^{-2x}$, $y = e^x + c - de^{-2x}$ **3.** $z = ce^{-2x} + dxe^{-2x}$, $y = -ce^{-2x} - d(x+1)e^{-2x}$, s poč. podm.: $z = -2xe^{-2x} + e^{-2x}$, $y = 2xe^{-2x} + e^{-2x}$ **4.** $z = (c-d)e^{-6x}\sin x + de^{-6x}\cos x$, $y = ce^{-6x}\cos x + (c - 2d)e^{-6x}\sin x$ **5.** $z = \frac{7}{40}e^x + \frac{1}{5}e^{-2x} + 2ae^{-4x} + be^{-7x}$, $y = \frac{1}{40}e^x + \frac{3}{10}e^{-2x} + ae^{-4x} - be^{-7x}$ **6.** $z = e^x - \frac{1}{6}x^3 + a + bx + cx^2$, $y = -e^x + \frac{1}{24}x^4 + \frac{1}{2}x^2 + d - (a+2c)x - \frac{b}{2}x^2 - \frac{c}{3}x^3$ **7.** $u = ae^{-x} + be^{2x} + ce^{-2x}$, $v = ae^{-x} + be^{2x} - ce^{-2x}$, $w = -ae^{-x} + 2be^{2x}$, s poč. podm.: $u = \frac{1}{3}e^{-x} + \frac{1}{6}e^{2x} + \frac{1}{2}e^{-2x}$, $v = \frac{1}{3}e^{-x} + \frac{1}{6}e^{2x} - \frac{1}{2}e^{-2x}$, $w = -\frac{1}{3}e^{-x} + \frac{1}{3}e^{2x}$ **8.** $u = ae^{2x} + be^{-x}$, $v = ae^{2x} + ce^{-x}$, $w = ae^{2x} - (b+c)e^{-x}$ s poč. podm.: $u = -e^{-x}$, $v = e^{-x}$, $w = 0$