

Differentialgleichungen I - Equations to practice. Answers.

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<http://dynamics.mi.fu-berlin.de/lectures/12SS-Gurevich-Dynamics/>

- (i) $y = x(Ce^{-x} - 1)$.
- (ii) $y(x^2 - C) = x; y = 0$.
- (iii) $y = C; y = C \pm e^x$.
- (iv) $x = Ce^y + y^2 + 2y + 2$.
- (v) $y^2(Ce^{2x} + x + 0.5) = 1; y = 0$.
- (vi) $px = C\sqrt{p} - 1, y = \ln p - C\sqrt{p} + 1$.
- (vii) $4x + y - 3 = 2 \tan(2x + C)$.
- (viii) $xy(\ln^2 x + C) = 1$.
- (ix) $(y - 4x + 2)^4(2y + 2x - 1) = C$.
- (x) $y = C \cos x + \sin x$.
- (xi) $(x^2 + y + \ln Cy)y = x$.
- (xii) $xe^y = e^x + C$.
- (xiii) $x = (C_1 + C_2t + C_3t^2)e^{2t}, y = (2C_1 - C_2 + (2C_2 - 2C_3)t + 2C_3t^2)e^{2t}, z = (C_1 - C_2 + 2C_3 + (C_2 - 2C_3)t + C_3t^2)e^{2t}$.
- (xiv) $x = e^t(C_1 \cos t + C_2 \sin t) + e^{-t}(C_3 \cos t + C_4 \sin t), y = e^t(C_1 \sin t - C_2 \cos t) + e^{-t}(C_4 \cos t - C_3 \sin t)$
- (xv) $x = C_1e^t + C_2e^{-t} + te^t - t^2 - 2, y = C_1e^t - C_2e^{-t} + (t - 1)e^t - 2t$.
- (xvi) $y = C_1e^{2x} + e^{-x}(C_2 \cos x\sqrt{3} + C_3 \sin x\sqrt{3})$.
- (xvii) $y = C_1 \cos x + C_2 \sin x + (2x - 2)e^x$.