WolframAlpha computational intelligence

solve y"-y= cosh(x)

NATURAL LANGUAGE MATH INPUT EXTENDED KEYBOARD EXAMPLES UPLOAD RANDOM

Input interpretation

solve	$y''(x) - y(x) = \cosh(x)$

$\cosh(x)$ is the hyperbolic cosine function

Result

Step-by-step solution

$$y(x) = c_1 e^x + c_2 e^{-x} - \frac{1}{4} e^{-x} x + \frac{e^x x}{4}$$

ODE classification

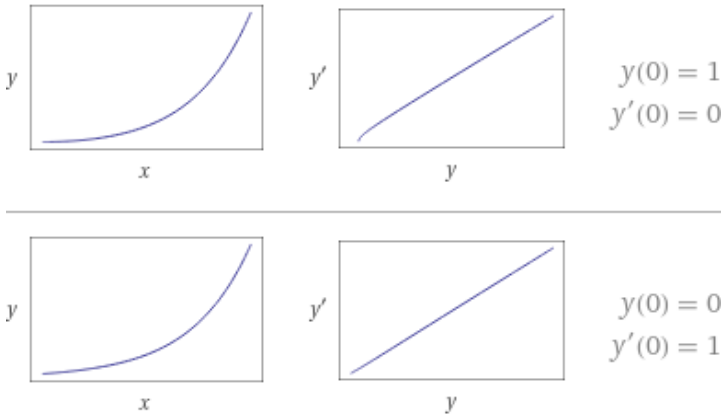
second-order linear ordinary differential equation

Alternate forms

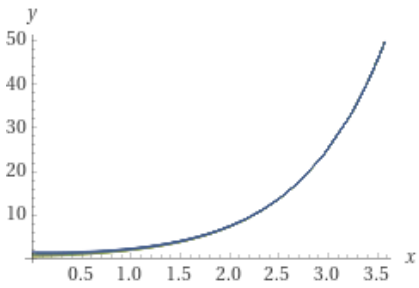
$$y(x) + \cosh(x) = y''(x)$$

$$y''(x) - y(x) = \frac{e^{-x}}{2} + \frac{e^x}{2}$$

Plots of sample individual solutions



Sample solution family



(sampling $y(0)$ and $y'(0)$)

Possible Lagrangian

$$\mathcal{L}(y', y, x) = \frac{1}{2}\left(2\, y \cosh(x) + y^2 + (y')^2\right)$$

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Related Queries:

- y''(t) + sin(y(t))=0, y(0…
- (x-1) y''(x) - x y'(x) + y…
- y' + x y' + 2x^2 = 0
- y' = y/(1 + x + y)
- arcsin(x) dx = arccos…

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