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> with( DEtools, odeadvisor ) :
> with( plots ) :
> ode1 := diff( y(t), t ) = t + 2 * y(t);

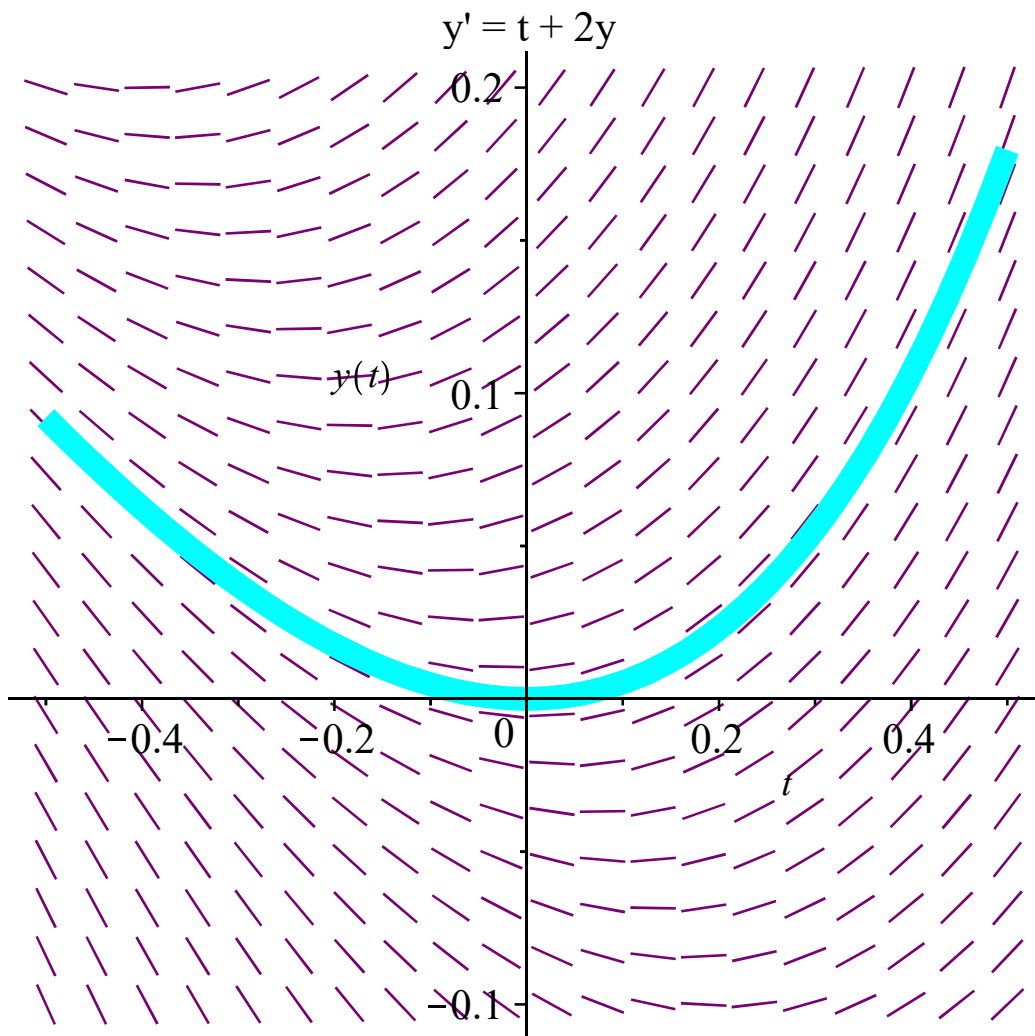
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$$ode1 := \frac{d}{dt} y(t) = t + 2y(t) \quad (1)$$

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> DEplot(ode1, [y(t)], t=-0.5..0.5, y=-0.1..0.2, arrows = LINE, color = purple, title
= "y' = t + 2y", {[0, 0]}, thickness = 9, linecolor = cyan );

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> odeadvisor(ode1, y(t))

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$$odeadvisor\left(\frac{d}{dt} y(t) = t + 2y(t), y(t)\right) \quad (2)$$

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> dsolve(ode1, y(t));

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$$y(t) = -\frac{t}{2} - \frac{1}{4} + e^{2t} _C1 \quad (3)$$

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> ans := rhs(dsolve({ode1, y(0) = 0}));

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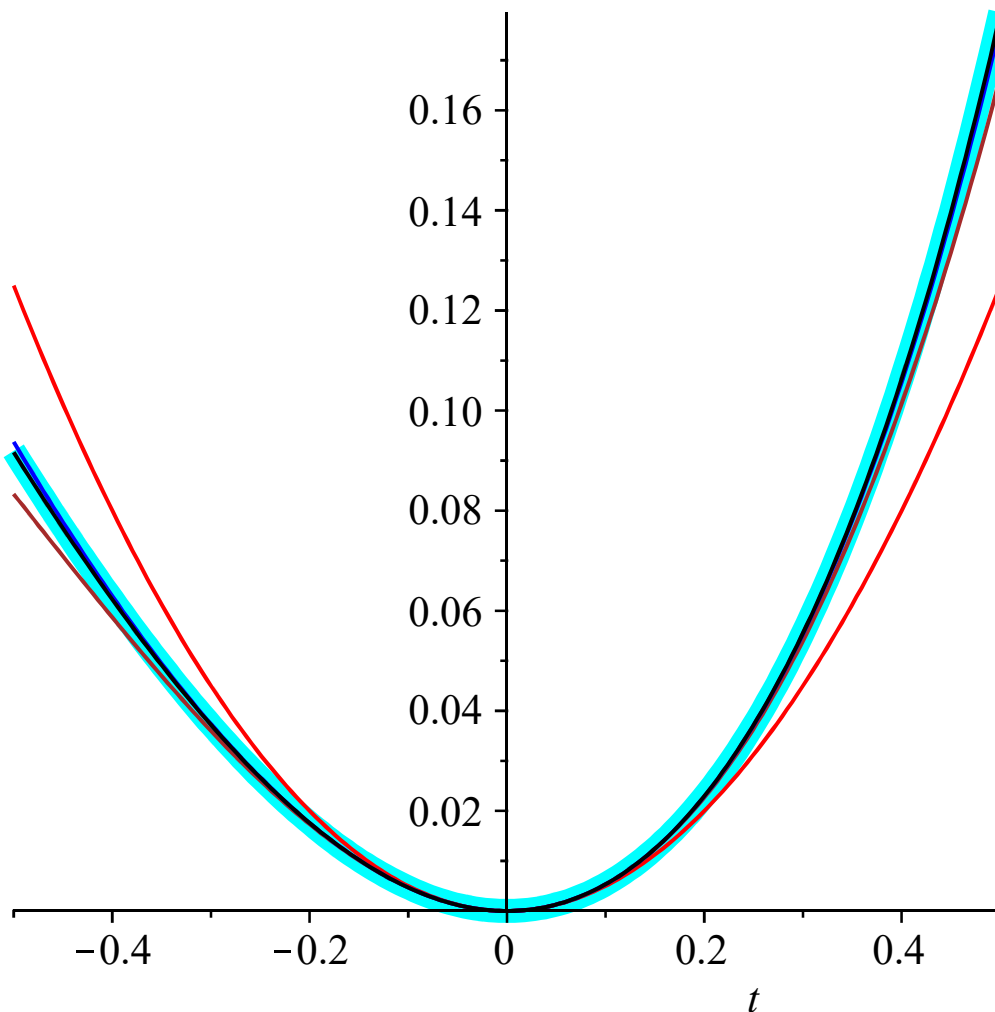
$$ans := -\frac{t}{2} - \frac{1}{4} + \frac{e^{2t}}{4} \quad (4)$$

```

> plots[multiple]\left(plot, [ans, t=-0.5..0.5, thickness=9, color=cyan], \left[\frac{t^2}{2}, t=-0.5..0.5, color

```

$$= \text{red}], \left[\frac{t^2}{2} + \frac{t^3}{3}, t = -0.5 \dots 0.5, \text{color} = \text{brown} \right], \left[\frac{t^2}{2} + \frac{t^3}{3} + \frac{t^4}{6}, t = -0.5 \dots 0.5, \text{color} = \text{blue} \right], \\ \left[\frac{t^2}{2} + \frac{t^3}{3} + \frac{t^4}{6} + \frac{t^5}{15}, t = -0.5 \dots 0.5, \text{color} = \text{black} \right] \Bigg)$$



>

$$\text{ans} := -4 \cdot t - \frac{5 \exp(-t)}{2} + \frac{7 \exp(t)}{2}$$

$$\text{ans} := -4 t - \frac{5 e^{-t}}{2} + \frac{7 e^t}{2}$$

(5)

$$\text{plots[multiple]} \left(\text{plot}, [\text{ans}, t = -2 \dots 2, \text{thickness} = 9, \text{color} = \text{cyan}], [1, t = -5 \dots 5, \text{color} = \text{red}], [1 + 2 t, t = -5 \dots 5, \text{color} = \text{brown}], \left[1 + 2 t + \frac{t^2}{2}, t = -5 \dots 5, \text{color} = \text{blue} \right], \left[1 + 2 t + \frac{t^2}{2} + t^3, t = -2 \dots 2, \text{color} = \text{black} \right], \left[1 + 2 t + \frac{t^2}{2} + t^3 + \frac{t^4}{24}, t = -2 \dots 2, \text{color} = \text{orange} \right], \left[1 + 2 t + \frac{t^2}{2} + t^3 + \frac{t^4}{24} + \frac{6 t^5}{120}, t = -2 \dots 2, \text{color} = \text{pink} \right] \Bigg)$$

