$$diff(\sin(t), t\$4) - \sin(t)$$

$$0 \tag{1}$$

$$diff(\cos(t), t\$4) - \cos(t)$$

$$0 \tag{2}$$

$$diff(\sinh(t), t\$4) - \sinh(t)$$

$$0 \tag{3}$$

$$diff(\cosh(t), t\$4) - \cosh(t)$$

$$0 \tag{4}$$

$$dsolve(diff(x(t), t) + t \cdot x(t) = 0, x(t))$$

$$x(t) = \_C1\, e^{-\frac{1}{2} t^2} \tag{5}$$

$$dsolve(diff(x(t), t\$2) + x(t) = 0, x(t))$$

$$x(t) = \_C1 \sin(t) + \_C2 \cos(t) \tag{6}$$

$$dsolve(4 \cdot diff(x(t), t\$2) + 8 \cdot diff(x(t), t) + 5 \cdot x(t) = 0, x(t))$$

$$x(t) = \_C1\, e^{-t} \sin\left(\frac{1}{2} t\right) + \_C2\, e^{-t} \cos\left(\frac{1}{2} t\right) \tag{7}$$

$$dsolve(diff(x(t), t\$2) - 3 \cdot diff(x(t), t) + 2 \cdot x(t) = 0)$$

$$x(t) = \_C1\, e^{2t} + \_C2\, e^{t} \tag{8}$$

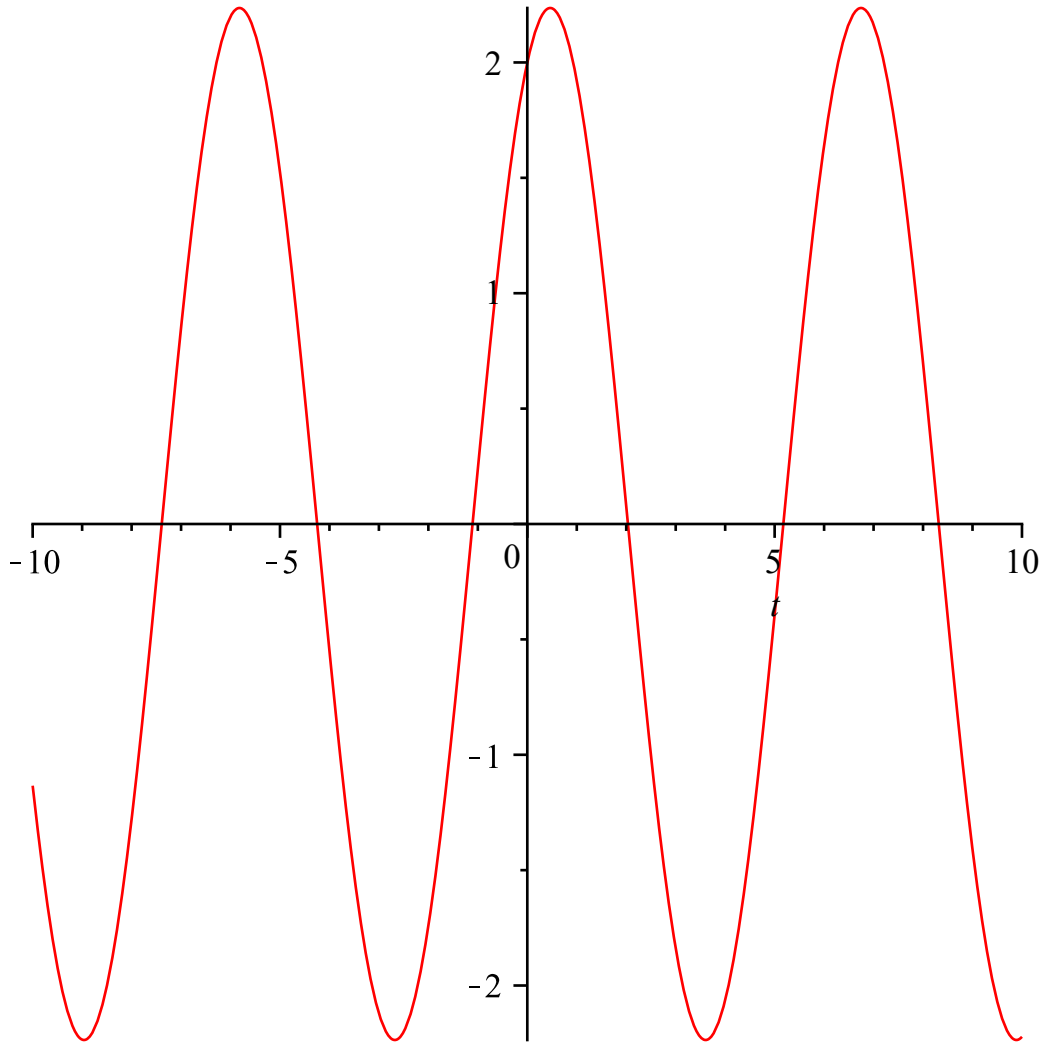
$$sol := dsolve\left(\left\{diff(x(t), t\$2) + x(t) = 0, x\left(\frac{\mathrm{Pi}}{2}\right) = 1, \mathrm{D}(x)\left(\frac{\mathrm{Pi}}{2}\right) = -2\right\}, x(t)\right)$$

$$x(t) = \sin(t) + 2\cos(t) \tag{9}$$

$$exprsol := rhs(sol)$$

$$\sin(t) + 2\cos(t) \tag{10}$$

$$plot(exprsol, t = -10..10)$$



$z := solve(diff(exprsol, t), t)$

$$\arctan\left(\frac{1}{2}\right) \tag{11}$$

$eval(exprsol, t = z)$

$$\sqrt{5} \tag{12}$$

$expand(\sin(t) + 2 * \cos(t) - sqrt(5) * \cos(t - \arctan(1/2)))$

$$0 \tag{13}$$

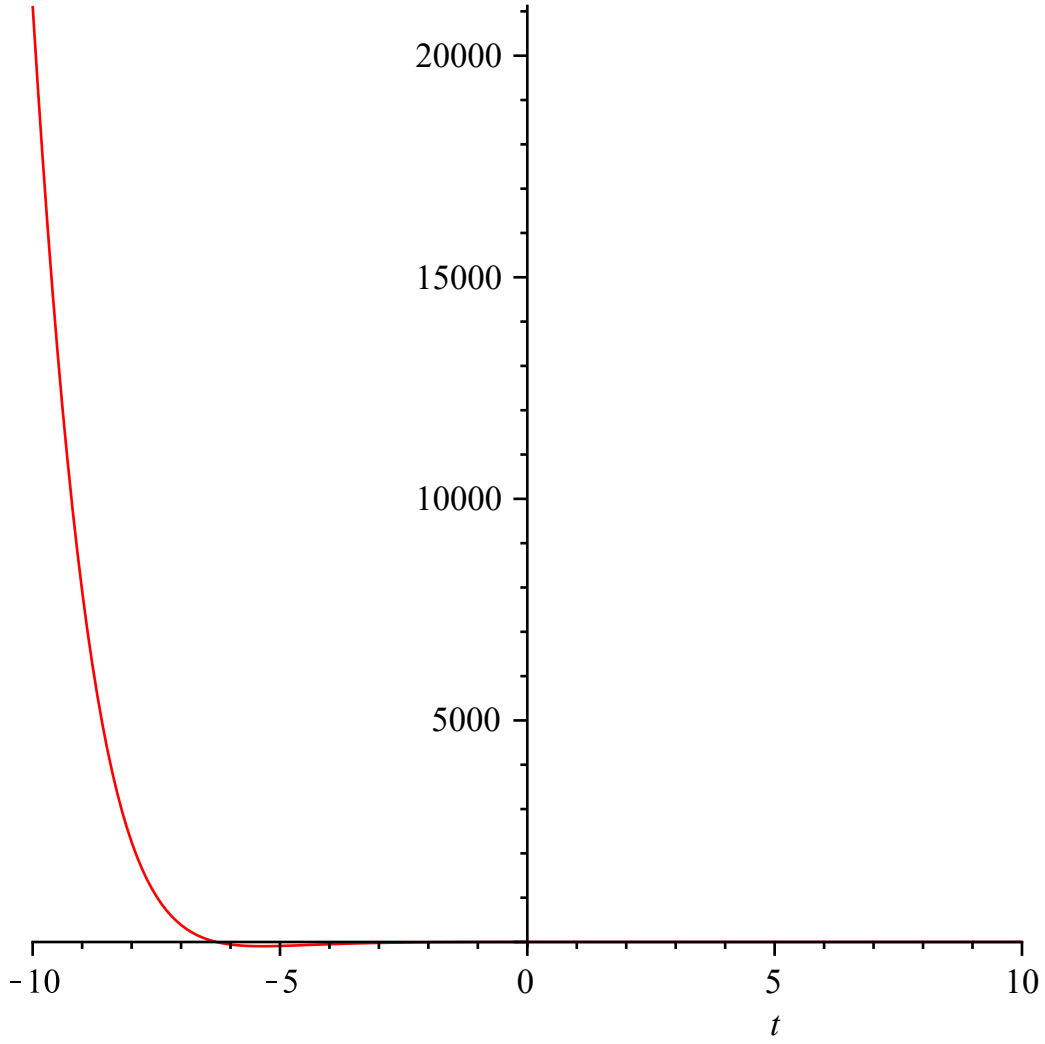
$sol := dsolve(\{4 \cdot diff(x(t), t\$2) + 8 \cdot diff(x(t), t) + 5 \cdot x(t) = 0, x(0) = 0, D(x)(0) = 0.5\}, x(t))$

$$x(t) = e^{-t} \sin\left(\frac{1}{2} t\right) \tag{14}$$

$exprsol := rhs(sol)$

$$e^{-t} \sin\left(\frac{1}{2} t\right) \tag{15}$$

$plot(exprsol, t = -10..10)$



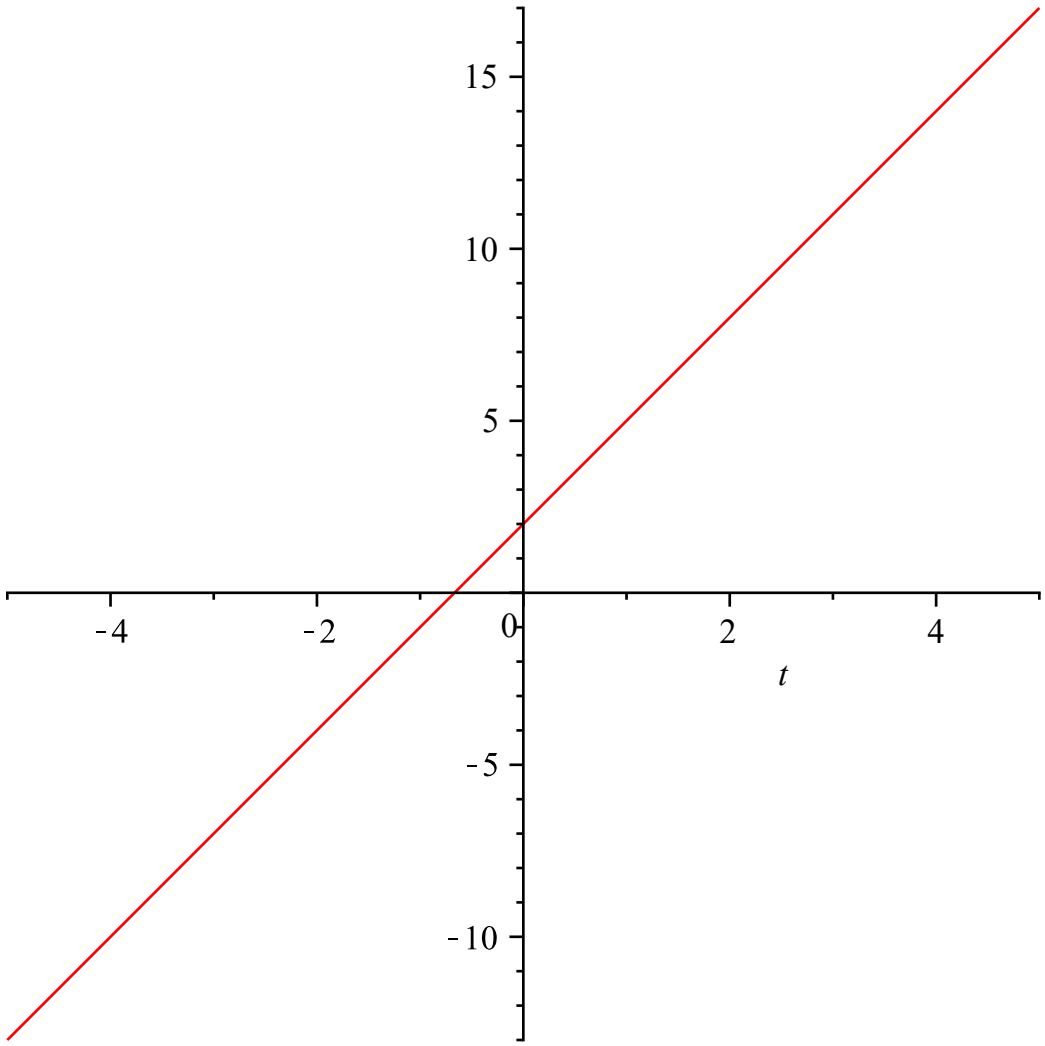
$sol := dsolve(\{diff(x(t), t\$2), x(0) = 2, D(x)(0) = 3\}, x(t))$

$$x(t) = 3t + 2 \quad \textbf{(16)}$$

$exprsol := rhs(sol)$

$$3t + 2 \quad \textbf{(17)}$$

$plot(exprsol, t = -5..5)$



$$dsolve(diff(x(t),t\$2)+5\cdot x(t)=0)$$

$$x(t)=\_C1\sin\left(\sqrt{5}\,t\right)+\_C2\cos\left(\sqrt{5}\,t\right) \quad \textbf{(18)}$$

$$dsolve(diff(x(t),t\$2)+t\cdot x(t)=0)$$

$$x(t)=\_C1\,\mathrm{AiryAi}(-t)+\_C2\,\mathrm{AiryBi}(-t) \quad \textbf{(19)}$$

$$dsolve\left(diff(x(t),t\$2)+t^5\cdot x(t)=0\right)$$

$$x(t)=\_C1\sqrt{t}\,\mathrm{BesselJ}\left(\frac{1}{7},\frac{2}{7}\,t^{7/2}\right)+\_C2\sqrt{t}\,\mathrm{BesselY}\left(\frac{1}{7},\frac{2}{7}\,t^{7/2}\right) \quad \textbf{(20)}$$

$$dsolve(\{diff(x(t),t\$2)+x(t)=0,x(0)=0,x(\mathrm{Pi})=0\},x(t))$$

$$x(t)=\_C1\sin(t) \quad \textbf{(21)}$$

$$dsolve(\{diff(x(t),t\$2)+x(t)=0,x(0)=0,x(1)=0\},x(t))$$

$$x(t)=0 \quad \textbf{(22)}$$

$$dsolve(\{diff(x(t),t\$2)+x(t)=1,x(0)=0,x(\mathrm{Pi})=0\},x(t))$$

$$dsolve(diff(x(t),t)+x(t)=15,x(t))$$

$$x(t)=15+e^{-t}\_C1 \quad \textbf{(23)}$$

$$dsolve(diff(x(t),t)+x(t)=2\cdot\exp(t)-7\cdot\exp(-3\cdot t))$$

$$x(t) = e^{t} + \frac{7}{2}\, e^{-3\,t} + e^{-t}\_C1 \tag{24}$$

$dsolve(diff(x(t), t) + x(t) = \sin(t) + 3\cdot\cos(t))$

$$x(t) = \cos(t) + 2\,\sin(t) + e^{-t}\_C1 \tag{25}$$

$dsolve(diff(x(t), t) + x(t) = \sin(t))$

$$x(t) = -\frac{1}{2}\,\cos(t) + \frac{1}{2}\,\sin(t) + e^{-t}\_C1 \tag{26}$$

$dsolve(diff(x(t), t) + x(t) = 3\cdot\cos(t))$

$$x(t) = \frac{3}{2}\,\cos(t) + \frac{3}{2}\,\sin(t) + e^{-t}\_C1 \tag{27}$$