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[> restart
[> AA := array([ [0, 1, 0], [0, 0, 1], [-1, -1, -1] ])

```

$$AA := \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -1 & -1 \end{bmatrix} \quad (1)$$

```

[> with(linalg) :
[> MatExp := exponential(AA, t)

```

$$MatExp := \begin{bmatrix} \frac{1}{2} e^{-t} + \frac{1}{2} \cos(t) + \frac{1}{2} \sin(t) & \sin(t) & \frac{1}{2} \sin(t) - \frac{1}{2} \cos(t) + \frac{1}{2} e^{-t} \\ -\frac{1}{2} \sin(t) + \frac{1}{2} \cos(t) - \frac{1}{2} e^{-t} & \cos(t) & \frac{1}{2} \cos(t) - \frac{1}{2} e^{-t} + \frac{1}{2} \sin(t) \\ -\frac{1}{2} \cos(t) + \frac{1}{2} e^{-t} - \frac{1}{2} \sin(t) & -\sin(t) & \frac{1}{2} e^{-t} - \frac{1}{2} \sin(t) + \frac{1}{2} \cos(t) \end{bmatrix} \quad (2)$$

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[> Xcero := array([3, 4, 5])

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$$Xcero := \begin{bmatrix} 3 & 4 & 5 \end{bmatrix} \quad (3)$$

```

[> SolHom := evalm( MatExp &* Xcero ) : SolHom[1]; SolHom[2]; SolHom[3]

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$$\begin{aligned} &4 e^{-t} - \cos(t) + 8 \sin(t) \\ &\sin(t) + 8 \cos(t) - 4 e^{-t} \\ &\cos(t) + 4 e^{-t} - 8 \sin(t) \end{aligned} \quad (4)$$

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