

> with(plots) :

ΒΟΛΗ ΧΩΡΙΣ ΑΝΤΙΣΤΑΣΗ :

Η οριζόντια συνιστώσα της ταχύτητας
παραμένει σταθερή , ανεξάρτητη από τον χρόνο.!!!

Έστω : $b=0$ (kg/s)

> DIARKEIA1 := 14.43075063 :

> tmaxYPSOS1 := 7.215375318 :

> BELHNEKES1 := 1020.408163 :

ΣΥΝΤΕΤΑΓΜΕΝΗ x

> evalf $\left(100 \cos\left(\frac{\pi}{4}\right) t \right)$

$$70.71067810 t$$

(1)

ΣΥΝΤΕΤΑΓΜΕΝΗ y

> evalf $\left(-4.900000000 t^2 + 100 \sin\left(\frac{\pi}{4}\right) t \right)$

$$-4.900000000 t^2 + 70.71067810 t$$

(2)

> seq $\left(\langle 70.71067810 t, -4.900000000 t^2 + 70.71067810 t \rangle, t=0 .. tmaxYPSOS1, \frac{tmaxYPSOS1}{3} \right)$

$$\begin{bmatrix} 0. \\ 0. \end{bmatrix}, \begin{bmatrix} 170.0680272 \\ 141.7233560 \end{bmatrix}, \begin{bmatrix} 340.1360543 \\ 226.7573695 \end{bmatrix}, \begin{bmatrix} 510.2040815 \\ 255.1020407 \end{bmatrix}$$

(3)

> seq $\left(\langle 70.71067810 t, -4.900000000 t^2 + 70.71067810 t \rangle, t=tmaxYPSOS1 .. DIARKEIA1, \frac{DIARKEIA1 - tmaxYPSOS1}{3} \right)$

$$\begin{bmatrix} 510.2040815 \\ 255.1020407 \end{bmatrix}, \begin{bmatrix} 680.2721085 \\ 226.7573695 \end{bmatrix}, \begin{bmatrix} 850.3401358 \\ 141.7233557 \end{bmatrix}, \begin{bmatrix} 1020.408163 \\ 1. \times 10^{-6} \end{bmatrix}$$

(4)

> Plist1 := [[(3)[1][1], (3)[1][2]], [(3)[2][1], (3)[2][2]], [(3)[3][1], (3)[3][2]], [(3)[4][1], (3)[4][2]], [(4)[1][1], (4)[1][2]], [(4)[2][1], (4)[2][2]], [(4)[3][1], (4)[3][2]], [(4)[4][1], (4)[4][2]]]:

TAXYTHTA v[x]

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>
> evalf(100 cos(π/4))
70.71067810 (5)
```

```
>
>
TAXYTHTA v[y]
> evalf(-9.80 t + 100 sin(π/4))
-9.80 t + 70.71067810 (6)
```

```
> seq(⟨70.71067810, -9.80 t + 70.71067810⟩, t = 0 .. tmaxYPSOSI, tmaxYPSOSI/3)
[ 70.71067810 ] [ 70.71067810 ] [ 70.71067810 ] [ 70.71067810 ]
[ 70.71067810 ] [ 47.14045206 ] [ 23.57022602 ] [ -2. × 10-8 ] (7)
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> seq(⟨70.71067810, -9.80 t + 70.71067810⟩, t = tmaxYPSOSI .. DIARKEIAI,
DIARKEIAI - tmaxYPSOSI/3)
[ 70.71067810 ] [ 70.71067810 ] [ 70.71067810 ] [ 70.71067810 ]
[ -2. × 10-8 ] [ -23.57022604 ] [ -47.14045210 ] [ -70.71067810 ] (8)
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>
>
AR1 := arrow(⟨(3)[1][1], (3)[1][2]⟩, ⟨(7)[1][1], (7)[1][2]⟩, color = blue, width = 5) :
AR2 := arrow(⟨(3)[2][1], (3)[2][2]⟩, ⟨(7)[2][1], (7)[2][2]⟩, color = blue, width = 5) :
AR3 := arrow(⟨(3)[3][1], (3)[3][2]⟩, ⟨(7)[3][1], (7)[3][2]⟩, color = blue, width = 5) :
AR4 := arrow(⟨(3)[4][1], (3)[4][2]⟩, ⟨(7)[4][1], (7)[4][2]⟩, color = blue, width = 5) :
AR5 := arrow(⟨(4)[2][1], (4)[2][2]⟩, ⟨(8)[2][1], (8)[2][2]⟩, color = blue, width = 5) :
AR6 := arrow(⟨(4)[3][1], (4)[3][2]⟩, ⟨(8)[3][1], (8)[3][2]⟩, color = blue, width = 5) :
AR7 := arrow(⟨(4)[4][1], (4)[4][2]⟩, ⟨(8)[4][1], (8)[4][2]⟩, color = blue, width = 5) :
>
AR1x := arrow(⟨(3)[1][1], (3)[1][2]⟩, ⟨(7)[1][1], 0⟩, color = cyan, width = 3) :
AR2x := arrow(⟨(3)[2][1], (3)[2][2]⟩, ⟨(7)[2][1], 0⟩, color = cyan, width = 3) :
AR3x := arrow(⟨(3)[3][1], (3)[3][2]⟩, ⟨(7)[3][1], 0⟩, color = cyan, width = 3) :
AR4x := arrow(⟨(3)[4][1], (3)[4][2]⟩, ⟨(7)[4][1], 0⟩, color = cyan, width = 3) :
AR5x := arrow(⟨(4)[2][1], (4)[2][2]⟩, ⟨(8)[2][1], 0⟩, color = cyan, width = 3) :
AR6x := arrow(⟨(4)[3][1], (4)[3][2]⟩, ⟨(8)[3][1], 0⟩, color = cyan, width = 3) :
AR7x := arrow(⟨(4)[4][1], (4)[4][2]⟩, ⟨(8)[4][1], 0⟩, color = cyan, width = 3) :
>
AR1y := arrow(⟨(3)[1][1], (3)[1][2]⟩, ⟨0, (7)[1][2]⟩, color = red, width = 7) :
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> AR2y := arrow(⟨(3)[2][1], (3)[2][2]⟩, ⟨0, (7)[2][2]⟩, color = red, width = 7) :
> AR3y := arrow(⟨(3)[3][1], (3)[3][2]⟩, ⟨0, (7)[3][2]⟩, color = red, width = 7) :
> AR4y := arrow(⟨(3)[4][1], (3)[4][2]⟩, ⟨0, (7)[4][2]⟩, color = red, width = 7) :
> AR5y := arrow(⟨(4)[2][1], (4)[2][2]⟩, ⟨0, (8)[2][2]⟩, color = red, width = 7) :
> AR6y := arrow(⟨(4)[3][1], (4)[3][2]⟩, ⟨0, (8)[3][2]⟩, color = red, width = 7) :
> AR7y := arrow(⟨(4)[4][1], (4)[4][2]⟩, ⟨0, (8)[4][2]⟩, color = red, width = 7) :
>
> Ppoint1 := pointplot(Plist1, color = red, symbol = solidcircle, symbolsize = 15) :
> P1 := plot([70.71067810 t, -4.900000000 t2 + 70.71067810 t, t = 0 .. DIARKEIA1], linestyle
= 1, thickness = 2, color = red) :
>
>
> display(AR1, AR2, AR3, AR4, AR5, AR6, AR7, AR1x, AR2x, AR3x, AR4x, AR5x, AR6x, AR7x,
AR1y, AR2y, AR3y, AR4y, AR5y, AR6y, AR7y, Ppoint1, P1, gridlines, labels = [x, y], title
= "ΒΟΛΗ ΧΩΡΙΣ ΑΝΤΙΣΤΑΣΗ -ΔΙΑΓΡΑΜΜΑ ΤΑΧΥΤΗΤΩΝ\nΣΥΝΙΣΤΩΣΕΣ ΚΑΤΑ x &
y\nΣΑΒΒΑΣ Π. ΓΑΒΡΙΗΛΙΔΗΣ", font = [arial, bold, 14])

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ΒΟΛΗ ΧΩΡΙΣ ΑΝΤΙΣΤΑΣΗ -ΔΙΑΓΡΑΜΜΑ ΤΑΧΥΤΗΤΩΝ
 ΣΥΝΙΣΤΩΣΕΣ ΚΑΤΑ x & y
 ΣΑΒΒΑΣ Π. ΓΑΒΡΙΗΛΙΔΗΣ

