

5 שני

7010

$M_1 = 0.5 \text{ kg}$

$M_2 = 2 \text{ kg}$

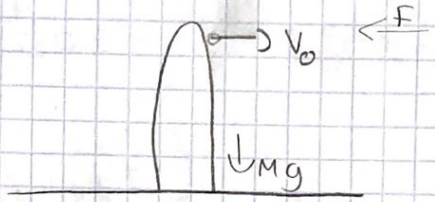
$h = 45 \text{ m}$

$v_{0x} = 30 \frac{\text{m}}{\text{sec}}$

$h = y_0$

$y = 0$

$v_{0y} = 0 \frac{\text{m}}{\text{sec}}$



$\Sigma F = Ma$

$y = h + v_{0y}t - \frac{1}{2}gt^2$

$0 = 45 - 5t^2$

זמן תחילת 2

$t = 3 \text{ sec}$

$t = 3 \text{ sec}$

הקואורדינטות ישרות -> רוח אחרת
התוצאה אינה משתנה
כיוון כוחות

(P)

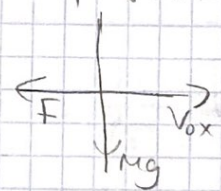
$\Sigma F_x = Ma_x$

M_1

$-10 = Ma_x$

$-10 = 0.5a_x$

$a_x = -20 \frac{\text{m}}{\text{sec}^2}$



$\Sigma F_y = Ma_y$

$-Mg = Ma_y$

$a_y = -10 \frac{\text{m}}{\text{sec}^2}$

$x = 30t$

$x = 90 \text{ m}$

$a = 0$

$x = 30t$

$x = 30t$

$x = 30t$

$x = 90 \text{ m}$

$x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2$

$x = 30t - 10t^2$

$x = 90 - 10(3)^2 = 0 \text{ m}$

$x = 0 \text{ m}$

M_2

$-10 = Ma_x$

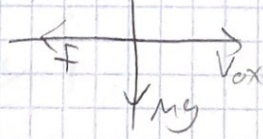
$-10 = 2a_x$

$a_x = -5 \frac{\text{m}}{\text{sec}^2}$

$x = 30t - 2.5t^2$

$x = 67.5 \text{ m}$

x_2



$x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2$

$x = 90 \text{ m}$

התוצאה אינה משתנה
כיוון כוחות

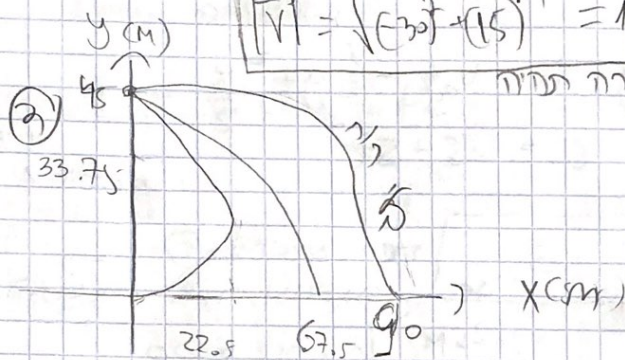
⊙ $V = V_0 + at$ מהירות סך הכל הספירה

1 ק"פ $V_x = 30 - 20t \rightarrow -30 \frac{m}{sec}$

2 ק"פ $V_x = 30 - 5t \rightarrow 15 \frac{m}{sec}$

$|V| = \sqrt{(-30)^2 + (15)^2} = 15\sqrt{5} \frac{m}{sec}$

היסקאות, הצורה תמיד
היסקאות



מהירות סך הכל
היסקאות

1 ק"פ $V_x = 30 \frac{m}{sec}$

2 ק"פ $V_y = 30 \frac{m}{sec}$

:6 15kel

25/10

$$t = 0 \text{ sec}$$

$$V_0 = 0 \text{ sec}$$

$$0 \leq t \leq 15 \text{ sec}$$

$$V(t) = \left(\sin\left(\frac{\pi}{5}t\right) \right)$$

cos

$$V'(t) = a(t)$$

$$V'(t) = a(t) = \frac{\pi}{5} \cos\left(\frac{\pi}{5}t\right) \frac{1}{\text{sec}^2}$$

$$0 \leq t \leq 15$$

1/10

$$0 \leq t \leq 5$$

$$5 \leq t \leq 10$$

$$10 \leq t \leq 15$$

$$a(t) = \frac{\pi}{5} \cos\left(\frac{\pi}{5}t\right) \quad a(t) = -\frac{\pi}{5} \cos\left(\frac{\pi}{5}t\right) \quad a(t) = \frac{\pi}{5} \cos\left(\frac{\pi}{5}t\right)$$

$$\bar{a} = \frac{\Delta V}{\Delta t} = \frac{V(15) - V_0}{15 - 0} = \frac{0 - 0}{15} = 0 \frac{1}{\text{sec}^2}$$

$$\int V(t) = X(t) \quad 0 \leq t \leq 5 \quad 5 \leq t \leq 10 \quad 10 \leq t \leq 15$$

$$\left(\int V(t) + C \right) dx = X(t)$$

$$X(t) = \cos\left(\frac{\pi}{5}t\right) + 1$$

$$X(t) = \cos\left(\frac{\pi}{5}t\right) + 3$$

$$X(t) = -\cos\left(\frac{\pi}{5}t\right) + 5$$

$$\bar{V} = \frac{\Delta X}{\Delta t} = \frac{X(15 \text{ sec}) - X_0}{15 - 0} = \frac{6}{15} = \frac{2}{5} \frac{1}{\text{sec}}$$



$$X(t) = -\cos\left(\frac{\pi}{5}t\right) \cdot \frac{5}{\pi} \cdot \frac{\pi}{5}$$

30/01

$$\vec{a}(t) = \begin{pmatrix} 48t^2 \\ 20 \end{pmatrix} \quad \text{גודל האקסלרצציה} \quad 818 \text{ סמ"ד/ס"ק}$$

$$-a_y^x = 20$$

$$V_0 = 0$$

$\int (48t^2) dx \rightarrow \frac{48}{3} t^3 + C \rightarrow 16t^3 + C$

$$t = 0 \text{ sec}$$

$$f(0)^3 + c = 0$$

$$C=0$$

$$\vec{V}_x = 16t^3$$

$$\nabla_y = (20)dx + c \rightarrow 20t$$

$$V_y = 20t$$

$$\therefore t = 1 \text{ sec } \text{P'3)}$$

$$\vec{V}_x = 16(1)^3 = 16$$

$$\vec{V}_y = 20 - 1$$

$$|\vec{V}| = \sqrt{(16)^2 + (20)^2} = 4\sqrt{41} \text{ m/sec}$$

$$t = 2 \text{ sec}$$

$$\bar{V}_x^2 = 16(2)^3 = 128 \frac{\text{m}}{\text{sec}}$$

$$\bar{V}_y = 20 \cdot 2 = 40 \frac{\text{m}}{\text{sec}}$$

$$|\vec{v}| = \sqrt{(128)^2 + (40)^2} = 134,10 \text{ m/s}$$

$$\arctan\left(\frac{20}{16}\right) \stackrel{t=1 \text{ sec } \text{msd } 1110}{=} 0.896^\circ$$

$t=2$ μs $|||$

$$\Rightarrow (4t^2 \text{ lot}^2) \arctan\left(\frac{40}{128}\right) = 0.3028^\circ$$

(ג) מיקום $P(t)$ כפונקציה של זמן: N מספר חלקיקים
כאשר $N = N_0 e^{-\lambda t}$

$$\int (6t^3) dx + c = \frac{6t^4}{4} + c \quad x = 4t^4$$

$$\int (20t) dx + c = \frac{20t^2}{2} = y = 10t^2$$

608
t

$$\vec{r}(t) = (4t^4, 10t^2)$$

$$: t=1 \quad \text{רקע}$$

$$\vec{r}_1(4, 10)$$

$$: t=2 \quad \text{רקע}$$

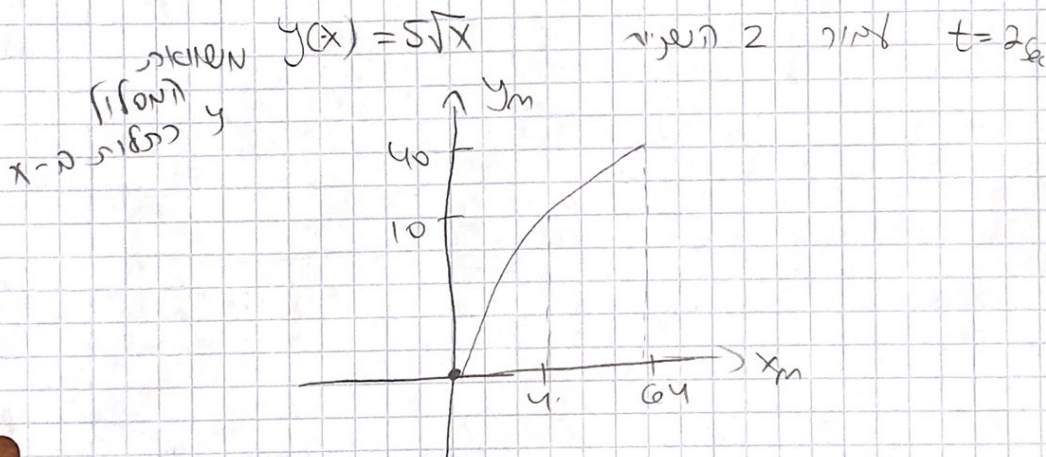
$$\vec{r}_2(64, 40)$$

© 1) $y(t) = 10t^2$

2) $x(t) = 4t^4$ $\sqrt{x} = 2t^2 \Rightarrow \sqrt{x} = 2t^2$

$$\frac{\sqrt{x}}{2} = t^2$$

$$y(x) = 10 \frac{\sqrt{x}}{2} = 5\sqrt{x}$$



3) $y(x) = 5\sqrt{x}$

$$5 \cdot \sqrt{x}$$

$$u = 5$$

$$u' = 0$$

$$v = \sqrt{x}$$

$$v' = \frac{1}{2\sqrt{x}}$$

$$y'(x) = \frac{2.5}{\sqrt{x}}$$

$$m = y'(1) = \frac{2.5}{\sqrt{1}} = 2.5$$

at $t=1 \text{ sec}$

$$m = y'(2) = \frac{2.5}{\sqrt{2}} = \frac{5\sqrt{2}}{4}$$

at $t=2 \text{ sec}$

2 sec