

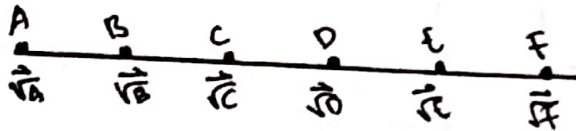
Nama: Indah Sina Tyar

Npm : 2013022042

Prodi : Pendidikan Fisika

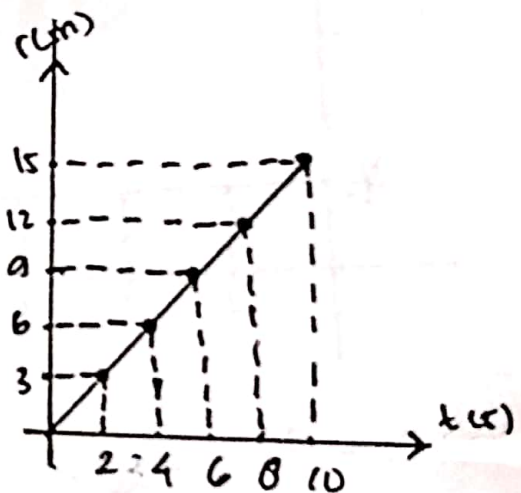
Tugas Uji Pemahaman Konsep 1

A) Gerak Lurus Beraturan



Grafik posisi tndp waktu

vektor posisi	waktu tempuh
$\vec{r}_A$	0
$\vec{r}_B$	2
$\vec{r}_C$	4
$\vec{r}_D$	6
$\vec{r}_E$	8
$\vec{r}_F$	10



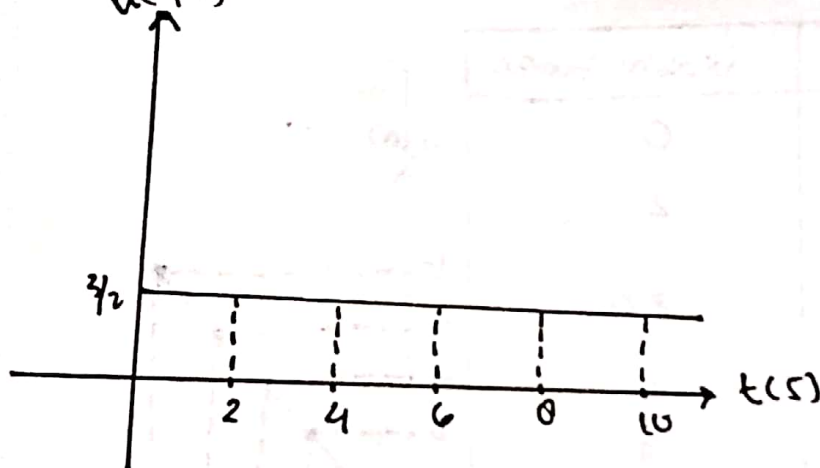
Pers posisi

$$\begin{aligned} r &= r_0 + v \cdot t \\ x_1 &= v \cdot t \end{aligned}$$

$$\begin{aligned} \Rightarrow r_B &= r + v \cdot t \\ 3 &= 0 + v \cdot 2 \\ v &= 3/2 \end{aligned}$$

Waktu t (s)	Vektor Posisi	kecepatan
0	$\vec{r}_A = 0$	0
2	$\vec{r}_B = 3i$	$3/2$
4	$\vec{r}_C = 6i$	$3/2$
6	$\vec{r}_D = 9i$	$3/2$
8	$\vec{r}_E = 12i$	$3/2$
10	$\vec{r}_F = 15i$	$3/2$

Grafik kec terhadap waktu



Pers kec $v_t = \frac{dx}{dt}$: konstan

contoh $v_B = \frac{3}{2} \text{ m/s}$, $v_C = \frac{6}{4} = \frac{3}{2} \text{ m/s}$

$\Rightarrow$ Pers kec $a = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1} = 0$

contoh $a = \frac{3/2 - 3/2}{4 - 2}$

$a = 0 \text{ m/s}^2$

Pers kecepatan $v_t = \frac{dx}{dt} = \text{konstan}$

Contoh $v_B = \frac{3}{2} \text{ m/s}$, $v_C = \frac{6}{4} = \frac{3}{2} \text{ m/s}$

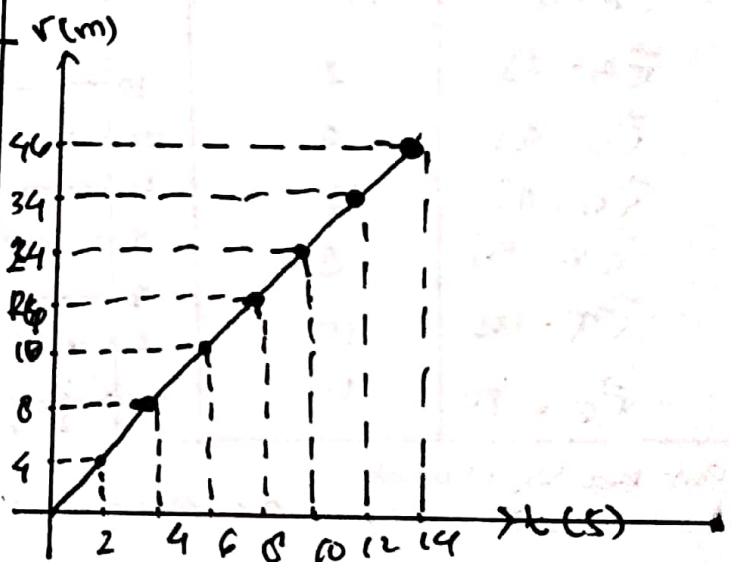
$\Rightarrow$ Pers Percepatan $a = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1} = 0$

Contoh $a = \frac{3/2 - 3/2}{4 - 2}$

$a = 0 \text{ m/s}^2$

B. GLBB

Vektor Posisi	Waktu Tempuh
$\vec{r}_A = 0$	0
$\vec{r}_B = 4i$	2
$\vec{r}_C = 6i$	4
$\vec{r}_D = 10i$	6
$\vec{r}_E = 16i$	8
$\vec{r}_F = 24i$	10
$\vec{r}_G = 34i$	12
$\vec{r}_H = 46i$	14



$\Rightarrow$ Persamaan Posisi

$$x_t = x_0 + ct^2$$

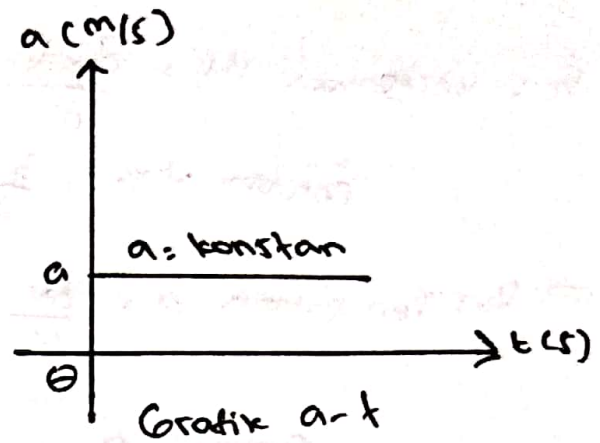
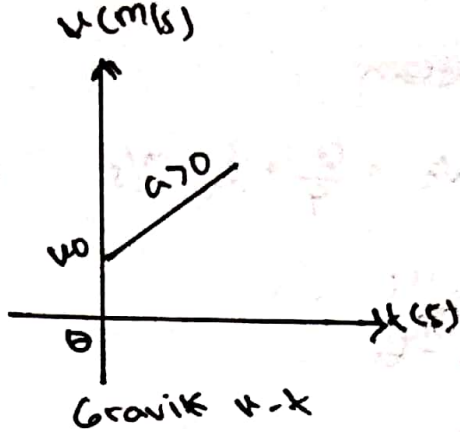
c : konstanta tergantung pada benda dan waktu

$\Rightarrow$ Pers kecepatan benda

$$v_t = v_0 + at$$

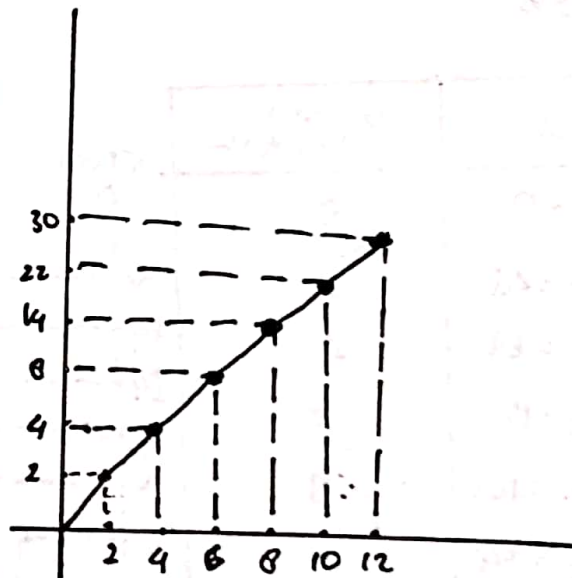
$\Rightarrow$ Pers Percepatan benda

$$a = \text{konstan}$$

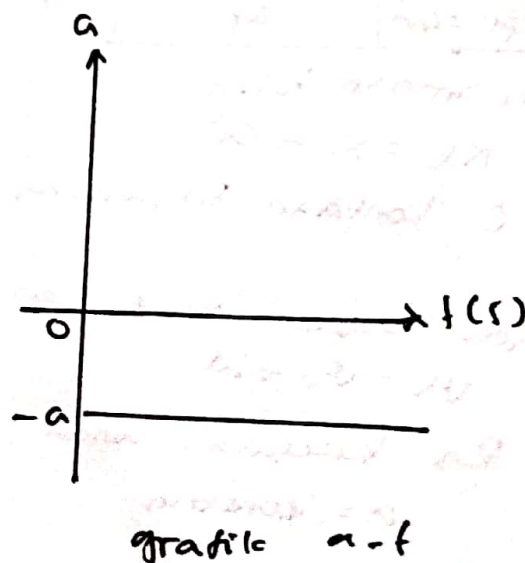
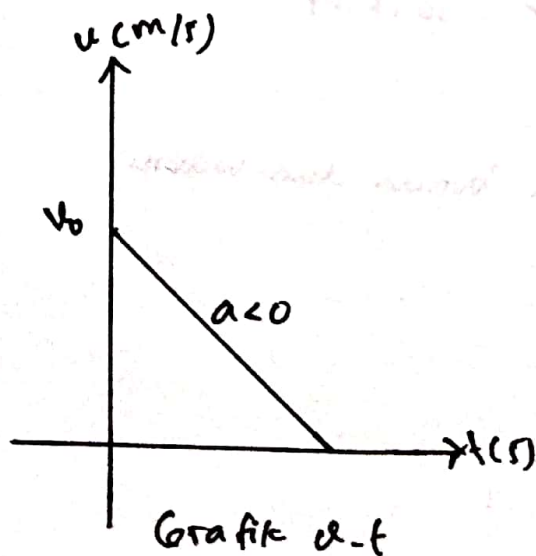


C) Gerak Vertikal ke Atas

Vektor Posisi	Waktu Tempuh
$\vec{r}_A = 0$	0
$\vec{r}_B = 2j$	2
$\vec{r}_C = 4j$	4
$\vec{r}_D = 8j$	6
$\vec{r}_E = 12j$	8
$\vec{r}_F = 22j$	10
$\vec{r}_G = 30j$	12



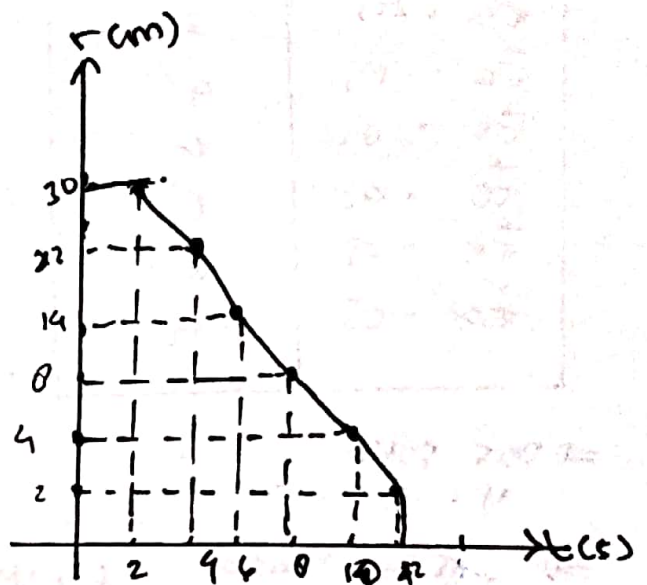
$\Rightarrow$ Pers kec $v_t = v_0 - at$
 $\Rightarrow$ Pers Percepatan benda $a = \text{konstan}$ dipercepat



D) Gerak Vertikal ke Bawah

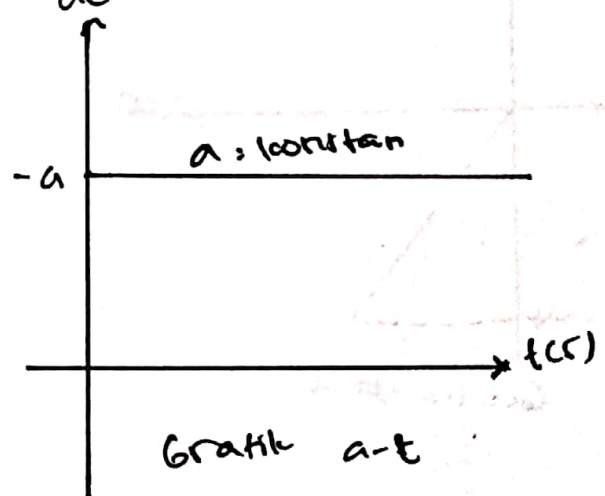
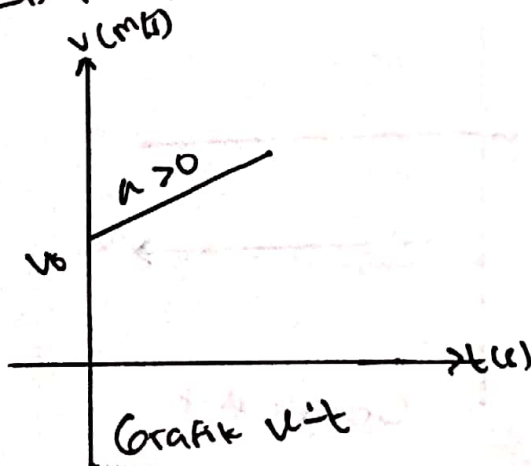
vektor posisi	waktu tempuh
$\vec{r}_A = 30\hat{j}$	0
$\vec{r}_B = 22\hat{j}$	2
$\vec{r}_C = 14\hat{j}$	4
$\vec{r}_D = 8\hat{j}$	6
$\vec{r}_E = 4\hat{j}$	8
$\vec{r}_F = 2\hat{j}$	10
$\vec{r}_G = 0\hat{j}$	12

Grafik posisi tndp waktu

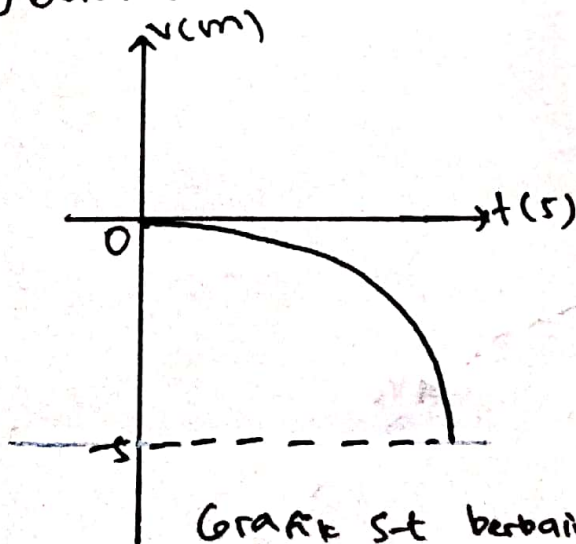


$\Rightarrow$ Pers kec $v_t = v_0 + at$

$\Rightarrow$ Pers Percepatan a : konstan dipercepat $a(m/s^2)$



E) Gerak Jatuh Bebas



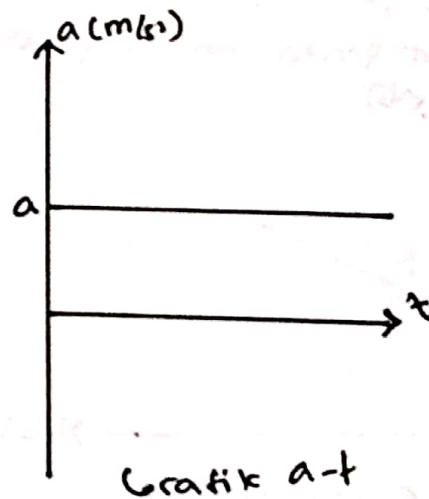
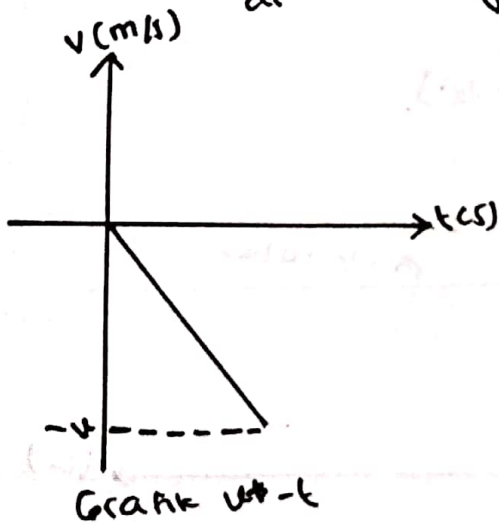
vektor posisi	waktu taman
$\vec{r}_A = 30\hat{j}$	0
$\vec{r}_B = 22\hat{j}$	2
$\vec{r}_C = 14\hat{j}$	4
$\vec{r}_D = 8\hat{j}$	6
$\vec{r}_E = 4\hat{j}$	8
$\vec{r}_F = 2\hat{j}$	10
$\vec{r}_G = 0\hat{j}$	12

⇒ Pers posisi
 $y = y_0 + ct^2$

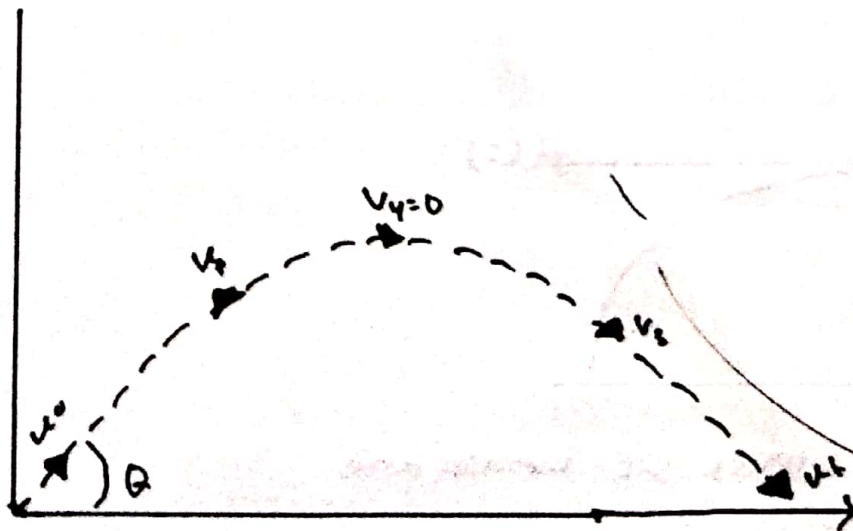
⇒ Pers kec. benda
 $v_y = \frac{dy}{dt} = 2ct$

$$t = \frac{v_y}{g}$$

$$v_y^2 = 2gy \text{ atau } v_y = \sqrt{2gy}$$



f) Gerak Parabola



$V = \sqrt{(V_x)^2 + (V_y)^2}$	kecepatan (V_x, V_y)	
	Sb x	Sb y
Kondisi awal Saat t sekon	$V_0 \cos \theta$	$V_0 \sin \theta$
	$V_0 \cos \theta$	$V_0 \sin \theta - gt$

	Kedudukan (x, y)		Waktu yang diperlukan
	Sb x	Sb y	
Kedudukan awal	0	0	0
Saat t sekon	$x = V_0 \cos \theta \cdot t$	$y = V_0 \sin \theta \cdot t - \frac{1}{2}gt^2$	t
Pada titik tertinggi	$x = \frac{V_0^2 \sin 2\theta}{g}$	$y_{\max} = \frac{V_0^2 \sin^2 \theta}{2g}$	$t = \frac{V_0 \sin \theta}{g}$
Pada titik terjauh	$x_{\max} = \frac{V_0^2 \sin 2\theta}{g}$	0	$t = 2 \frac{V_0 \sin \theta}{g}$