

Nama: Andri Firman Saputra

UTS Fisika Dasar

NIM: 201011402125

No  
Date

1.  $P = e \sigma^1 T^m A^n$

$$\sigma = [M T^{-3} \theta^{-4}]$$

ditanyakan:

Tentukan nilai  $l, m, n$ !

Nyatakan kembali persamaan diatas dgn memasukkan nilai  $l, m, n$ !

$$[M][L]^2[T]^{-3} = e \cdot ([M T^{-3} \theta^{-4}])^l \cdot [\theta]^m \cdot ([L]^2)^n$$

$$[M][L]^2[T]^{-3} = e \cdot [M]^l [T]^{-3l} [\theta]^{-4l+m} [L]^{2n}$$

$$[M]: 1 = 1l$$

$$l = 1/1 = 1$$

$$[L]: 2 = 2n$$

$$n = \frac{2}{2} = 1$$

$$[T]: -3 = -3l$$

$$l = \frac{-3}{-3} = 1$$

$$[\theta]: 0 = -4l + m$$

$$m = 4$$

$$P = e \cdot \sigma^2 \cdot T^4 \cdot A^1$$

$l = 1 + 1 = 2$
$m = 4$
$n = 1$



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$$\begin{aligned} 2. T &= (M^{-1} L^3 T^{-2}) \\ &= M^{-1} L^3 T^{-2} \\ T &= M \sqrt{\frac{3}{6}} \end{aligned}$$

\* Dari dimensi M  
 $M=1$

\* Dari dimensi T \* Dari dimensi L  
 $1 = -2z$   
 $z = -\frac{1}{2}$

3. Dik:  $F_1 = 20 \text{ N}$   
 $F_2 = 15 \text{ N}$   $53^\circ$   
 $F_3 = 25 \text{ N}$   $37^\circ$

$$F_{1x} = 20 \text{ N}$$

$$\begin{aligned} F_{2x} &= -15 \text{ N} \cdot \cos(53^\circ) \\ &= -9,027 \text{ N} \end{aligned}$$

$$\begin{aligned} F_{3x} &= -25 \text{ N} \cdot \cos(37^\circ) \\ &= -19,966 \text{ N} \end{aligned}$$

$$F_{1y} = 0 \text{ N}$$

$$\begin{aligned} F_{2y} &= -15 \text{ N} \cdot \sin(53^\circ) \\ &= -11,979 \text{ N} \end{aligned}$$

$$\begin{aligned} F_{3y} &= 25 \text{ N} \cdot \sin(37^\circ) \\ &= 15,045 \text{ N} \end{aligned}$$

$$\Sigma F_x = 20 + (-9,027) + (-19,966) = -8,993 \text{ N}$$

$$\Sigma F_y = 0 + (-11,979) + 15,045 = 3,066 \text{ N}$$

$$\begin{aligned} R &= \sqrt{F_x^2 + F_y^2} \\ &= \sqrt{(-8,993)^2 + (3,066)^2} \\ &= \sqrt{80,874 + 9,4} = 9,501 \text{ N} \\ &= \sqrt{90,274} \end{aligned}$$



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4. Dik:

$$F_1 = 20 \text{ N}$$

$$F_2 = 15 \text{ N } 60^\circ$$

$$F_3 = 25 \text{ N}$$

$$F_{1x} = 20 \text{ N}$$

$$F_{2x} = -15 \text{ N} \cdot \cos(60)^\circ = -7,5 \text{ N}$$

$$F_{3x} = -25 \text{ N}$$

$$F_{1y} = 0 \text{ N}$$

$$F_{2y} = -15 \text{ N} \cdot \sin(60)^\circ = -12,990 \text{ N}$$

$$F_{3y} = 0 \text{ N}$$

$$\Sigma F_x = 20 \text{ N} + (-7,5) \text{ N} + (-25) \text{ N} = -12,5 \text{ N}$$

$$\Sigma F_y = 0 \text{ N} + -12,990 \text{ N} + 0 \text{ N} = -12,990 \text{ N}$$

$$R = \sqrt{F_x^2 + F_y^2}$$

$$= \sqrt{(-12,5)^2 + (-12,990)^2}$$

$$= \sqrt{156,25 + 168,74}$$

$$= \sqrt{324,99}$$

$$= 18,027 \text{ N}$$



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$$\begin{aligned} 5. a. F &= m \cdot a \\ &= 5 \cdot 2 \\ &= 10 \text{ N} \end{aligned}$$

$$\begin{aligned} b. \text{perubahan sruar} &= \text{gaya} \times \text{Perpindahan} \\ &= 10 \times \text{titik B}(40, 50, 15) - \text{titik A} \\ &\quad (20, 30, 10) \\ &= 10 \times (20, 20, 5) \\ &= 10 \times (20 \cdot \cos 60^\circ, (20 \cdot \cos 60^\circ), (5 \cdot \cos 45^\circ)) \\ &= 10 \times (10, 10, 3, 54) \\ &= (100, 100, 35, 4) \\ &= 235,4 \text{ N} \end{aligned}$$

$$\begin{aligned} 6. a. P &= m \times v \\ &= 5 \text{ kg} \cdot 10 \text{ m/s} \\ &= 50 \text{ kg m/s} \end{aligned}$$

$$\begin{aligned} b. L &= \vec{r} \times \vec{P} \\ &= \sqrt{(15-10)^2 + (20-17)^2 + (15-5)^2} \times 50 \\ &= \sqrt{25 + 9 + 100} \times 50 \\ &= \sqrt{134} \times 50 \\ &= 50 \sqrt{134} \end{aligned}$$

titik A = (10, 17, 5)  
titik B = (15, 20, 15)

$$\begin{aligned} 7. \text{Dik: } a(t) &= (5t+3) \text{ m/s}^2 \\ v_0 &= 15 \text{ m/s} \\ x_0 &= 5 \text{ m} \end{aligned}$$

\* Cari vektor kecepatan

$$\begin{aligned} v &= v_0 + \int a \cdot dt \\ &= 15 + \int (5t+3) dt \\ &= 15 + \frac{5t^2}{2} + 3t \end{aligned}$$

$$v = \frac{5t^2}{2} + 3t + 15 \text{ m/s}$$



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\* cari vektor perpindahan

$$\begin{aligned}x &= x_0 + \int v dt \\&= 5 + \int \frac{5}{2} t^2 + 3t + 15 \\&= 5 + \frac{5}{3} t^3 + \frac{3}{2} t^2 + 15t \\&= \frac{5}{3} t^3 + \frac{3}{2} t^2 + 15t + 5 \text{ m}\end{aligned}$$

\* cari perpindahan detik ke-1

$$\begin{aligned}x(1) &= \frac{5}{3} (1)^3 + \frac{3}{2} (1)^2 + 15(1) + 5 \\&= \frac{5}{3} + \frac{3}{2} + 15 + 5 \\&= \frac{10 + 9 + 90 + 30}{6} \\&= \frac{139}{6} \text{ m}\end{aligned}$$

\* cari perpindahan detik ke-6

$$\begin{aligned}x(6) &= \frac{5}{3} (6)^3 + \frac{3}{2} (6)^2 + 15(6) + 5 \\&= \frac{5}{3} \cdot 216 + \frac{3}{2} \cdot 36 + 15 \cdot 6 + 5 \\&= 360 + 54 + 90 + 5 \\&= 509 \text{ m}\end{aligned}$$

\* cari kecepatan rata-rata

$$\begin{aligned}v &= \frac{\Delta x}{\Delta t} \\&= \frac{x_2 - x_1}{t_2 - t_1} \\&= \frac{509 - 139/6}{6 - 1} \\&= \frac{3054 - 139}{5} \\&= \frac{2915}{5} \\&= 583 \\&= 97,16667 \text{ m/s}\end{aligned}$$



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dik:

8.  $v = 14 \text{ m/s}$

$h = 1,2 \text{ m}$

$s = 6,857 \text{ m}$

$$t = \sqrt{\frac{2h}{g}}$$
$$= \sqrt{\frac{2 \cdot 1,2}{10}}$$

$= 0,4898 \text{ s}$

$s = v \times t$

$= 14 \text{ m/s} \times 0,4898 \text{ s}$

$= 6,857 \text{ m}$

9. \*  $t = \frac{s}{v_0 \cos \theta}$

$= \frac{12}{v_0 \cos(37^\circ)}$

$= \frac{12}{(v_0 \cdot 0,8)}$

$= \frac{15 \text{ m}}{v_0}$

\*  $h = v_0 y t - \frac{1}{2} g t^2$

$= v_0 \sin(37^\circ) \cdot t - \frac{1}{2} \cdot 10 \cdot t^2$

$3,5 = v_0 \cdot 0,6 \cdot t - 5 t^2$

$5 \cdot t^2 - v_0 \cdot 0,6 \cdot t + 3,5 = 0$

\*  $5 \cdot \left(\frac{15}{v_0}\right)^2 - v_0 \cdot 0,6 \left(\frac{15}{v_0}\right) + 3,5 = 0$

$5 \cdot \frac{225}{v_0^2} - v_0 \cdot \frac{9}{v_0} + 3,5 = 0$

$\frac{1125}{v_0^2} - 5,5 = 0$

$- 5,5 = - \frac{1125}{v_0^2}$



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$$-5,5 \cdot V_0^2 = -1125$$

$$V_0^2 = \frac{-1125}{-5,5}$$

$$V_0^2 = 204,545 \text{ m}^2/\text{s}^2$$

$$V_0 = \sqrt{204,545 \text{ m}^2/\text{s}^2}$$

$$V_0 = 14,3 \text{ m/s}$$

10. a.  $\omega(t) = 3t^2 - 4t + 2$

$$\omega(t) = \int 3t^2 - 4t + 2$$

$$\omega(t) = 6t - 4$$

$$\begin{aligned}\omega(2) &= 6(2) - 4 \\ &= 12 - 4 \\ &= 8 \text{ m/s}^2\end{aligned}$$

b. Posisi sudut  $= t^3 - 2t^2 + 2t + \theta$

$$t = 1 \text{ s}$$

$$\begin{aligned}\text{posisi sudut} &= 1^3 - 2 \cdot 1^2 + 2 \cdot 1 + \theta \\ &= 1 - 2 + 2 \\ &= 1\end{aligned}$$

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

$$\begin{aligned}\text{pos. sudut} &= 2^3 - 2(2)^2 + 2 \cdot (2) + 4 \\ &= 8 - 8 + 4 + 4 \\ &= 8 \text{ rad}\end{aligned}$$



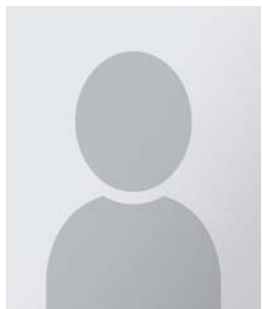
**UNIVERSITAS PAMULANG**  
**KARTU UJIAN TENGAH SEMESTER GANJIL 2020/2021**  
**NOMOR UJIAN : 378872470175**

FAK/PRODI : TEKNIK / TEKNIK INFORMATIKA  
NAMA : ANDRI FIRMAN SAPUTRA  
NIM : 201011402125  
SHIFT : REGULER A

No	Hari/ Tanggal	Waktu	Ruang	Kelas	Mata Kuliah	Paraf
1	-			01TPLP023	PENDIDIKAN AGAMA	1
2	-			01TPLP023	PENDIDIKAN PANCASILA	2
3	-			01TPLP023	KALKULUS 1	3
4	-			01TPLP023	FISIKA DASAR 1	4
5	-			01TPLP023	LOGIKA INFORMATIKA	5
6	-			01TPLP023	ALGORITHMAMA DAN PEMROGRAMAN I	6
7	-			01TPLP023	PRAKTIKUM FISIKA I	7
8	-			01TPLP023	BAHASA INGGRIS I	8
9	-			01TPLP023	PENGANTAR TEKNOLOGI INFORMASI	9

**Peraturan dan Tata Tertib Peserta Ujian**

1. Peserta ujian harus berpakaian rapi, sopan dan memakai jaket Almamater
2. Peserta ujian sudah berada di ruangan sepuluh menit sebelum ujian dimulai
3. Peserta ujian yang terlambat diperkenankan mengikuti ujian setelah mendapat ijin, tanpa perpanjangan waktu
4. Peserta ujian hanya diperkenankan membawa alat-alat yang ditentukan oleh panitia ujian
5. Peserta ujian dilarang membantu teman, mencontoh dari teman dan tindakan-tindakan lainnya yang mengganggu peserta ujian lain
6. Peserta ujian yang melanggar tata tertib ujian dikenakan sanksi akademik



Pamulang, 03 November 2020  
Ketua Panitia Ujian

**Dr. E. NURZAMAN AM, M.M, M. Si**  
**NIDK. 8811520016**