DOMINIO-FISICA 01

(MU) $x = 20 + 5t$ $x(m)$ $t(s)$

20 m + 5s

$x = \frac{20m}{5s}$ $x = 4 m/s$

20m, 5m/s a) ✓

02

BARALHÃO_MARCHA 5km/h

1:30 h

JIPE 80 km/h

5km/h × 1.5 = 7.5km

80km/h - 5km/h = 75km/h

80km/h - 5km/h = 7.5km

$x = \frac{7.5}{75} = 0.1h = 6min$ ✓

PHYSICS - RESNICK, WALKER

Question 01

THE STANDARD CAN BE MORE PRECISE, ~~NEVERTHELESS~~ NONETHELESS IT SHALL NOT VARY BY THE MEANS OF BEING AN INSTRUMENT OF COMPARISON OR SO, BEING A STANDARD. OTHERWISE IT SHOULD BE NOT, LETTING ROOM — TO MORE PRECISEMENTS. ✓

02

MAXIMUM OR REALLY WELL STATED PRECISION AND MEASURE METHOD UNDERSTANDING. ✓

SO, TABLE 1 WILL BE JUST ABOUT THE SAME, ONLY WITHOUT THE TIME. ✓

EX.: GREEN ELEMENT'S SPIN = LENGHT. 0 ... N × ...

04

NO. THE SCALE IS NOT ADEQUATED TO HUMAN SCALE. ✓

Problems 01

a) 10^6 phones = MEGA PHONES

b) 10^{-6} PHONES: MICROPHONES

c) 10^1 CARDS = DEKA CARDS

d) 10^9 GIGA LOWS

e) 10^{12} bulls = terabulls

f) 10^{-1} MATES = decimates

g) 10^{-2} PEDES = CENTIPEDES

h) 10^{-9} NANNETTES NANO NANETTES

i) 10^{-12} boos = picoboos

j) 10^{-18} boys = ATTOBOYS

k) 2×10^{-6} witches = ...

l) 2×10^3 MOCKINGBIRDS = ...

$NH_4 = 1 \times 10^{-15}$ ROSSO = ...

10^{-9} NEKOS = NANONEKOS

10^{-6} RORURI = MICRORURORI

10^{18} ... = EXA... ✓

03

a) $\frac{36k}{365}$ = 98.630136 /day

$y \times 5$ = 493.150685 (5d)

$y \times 7$ = 690.410959 (7d)

b) 20 MEGABUCKS/YEAR FOR 20 YEARS.

$\frac{1 \times 10^6}{20} = 50000 = F$

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c) 30 MEGABYTES

8 bytes / WORD

KILO = 1024 (2×10^{29})

MEGA = 20480 2048

$L\ 1000 \times$ KILO = 1024×10^3

$\frac{L\ 1024 \times 10^6}{8} \times 30 =$

$\frac{A}{b} \times c = d$ ✓

$= 3.84 \times 10^6$ WORDS

02

FERMI, 1 MICROCENTURY

50 MIN = 1 LECTURE

CENTURY = 100 YEARS

MICRO = 10^{-6}

$10^{-6} \times 100\ y = 1 \times 10^{-4}\ y$

~~365 days × 24 HOURS~~

~~$= 8.76 \times 10^3$ h/year~~

~~$A \times b = 0.876 h = C$~~

~~...~~

~~YEAR = ... SECONDS~~

~~365×10^{3} = 500 000 h~~

YEAR = 365 × 24 × 60 × 60 = N SECONDS

~~= 3.1536 × 10⁷ SECONDS~~

~~= 1 MICROCENTURY~~

~~= 52.56 min~~

~~365 × ... 10^{-4} = 0.876~~

$365 \times 1 \times 10^{-4} \times 24 = 0.876\ h$

~~0.876 × 60 = 52.56 min~~

0.876 × 60 = 52.56

= 1 MICROCENTURY

$\frac{1}{100}(50) = a$ $\frac{1}{100}(52.56) = b$

~~$b - a = 0.0256$~~

$2.56 \div \frac{1}{100}(50) = 5.12$

$2.6 \div \frac{1}{100}(50) = 5.2$ ✓

04 20/10/24

VOBS:

LET AN GROUP α BE HOLDING AN INFINITE NUMBER OF ELEMENTS, AS WELL GROUPS THAT ALSO EXPAND BY THEMSELVES.

GROUP α, FROM EXTERNAL PERSPECTIVE SHRINKS INFINITELY BUT NEVER REACHES 0.

NOW LET β TO BE INSIDE α. β EXPANDS INTERNALLY AND EXTERNALLY TO ITSELF, CONTAINING OTHER ITEMS AND GROUPS. θ IS ALSO SUBGROUP OF α, BUT IT SHRINKS EXTERNALLY AS IT GROWS INSIDE TO THE INFINITE.

$$\sum_{0 \to +\infty}^{\infty} \left\{ \frac{\alpha_{i+1}^{n=0}}{N+i} \left[\beta_{i+1}^{\infty}, \theta_{\frac{i+1}{N+1}}^{\infty}, N \right] \dots \right\}$$

2020/01/04

$\overline{AB} = \frac{d}{t}$

$\overline{AOB} = \theta$ $\overline{OAB} = \alpha$

$\overline{AB} = 3000$ $\frac{24 g}{360} = \frac{360}{24} = 15°/h$

$\alpha = 3 \times 15° = 45°$ = ... mi

$\frac{360}{45} = 8$ ✓

$8 \times \alpha = 360$

$8 \times 3000 = 24000\ mi$

✓ 01 CORRECTION

i) 10^{-12} boos = picoboos (PIKaboo)

$K \times 10^3$ mockingbirds = Kilomockingbirds

(To kill a mockingbird, or ...)

a) $\frac{36000}{12 \times 4}$ / $\frac{36000}{52\ week}$ = (692.30...)

= 692/WEEK ✓ 02

= \$41 666,6667 / MONTH ✓

c) $\frac{30 \times 10^9}{8} = 3.75 \times 10^9$ ✓

$1c = 100\ y \left(\frac{365 d}{1 y}\right)\left(\frac{24 h}{1 d}\right)\left(\frac{60 min}{1 h}\right)$ 03

5.256×10^7 MIN/CENTURY

$\times 10^{-6}$ = 52.56 MIN/MICRO-CENTURY

$\frac{2.56}{50} \times 100 = 5.12\%$ ✓

$\frac{3000}{3} = 1000$ 24 × 1000 = 24000 ✓ 04

05 EXERCISES

$\pi \times 10^7$ ≠ A A = 24 × 60 × 60 × ...

$\frac{A - \pi \times 10^7}{\pi \times 10^7} = \frac{a}{A} \times 100$ ...

... = 0.0382205...

$365.25 \left(\frac{24}{1}\right)\left(\frac{60}{1}\right)\left(\frac{60}{1}\right)$

$= 31557600 = 3.1558 \times 10^7$

$3.1416 \times 10^7 - 3.1558 \times 10^7$

$= -3.1558 \times 10^7$

$= 0.0044993611 \times 100$

$= -0.449936117 = 0.45\%$

$= -0.45\%$ ✓

$\lim_{x \to 0} (g(x) - h(x))$ 01

$= -1$ ✓

$\lim_{x \to 2} (f(x) + g(x))$ 02

$= 4$ ✓

$\lim_{x \to a} (-2g(x)) = -6$ 03 ✓

03

(POSITION)

$x_0 = 20$; $20 - 15$

= 24 m ... $x_f = 9$; $v_{15} = 0$

DISPLACEMENT

$\Delta x = x_f - x_0$ $x_0 = 12$

$x_0 = 20$ $x_f - x_0 = -27$

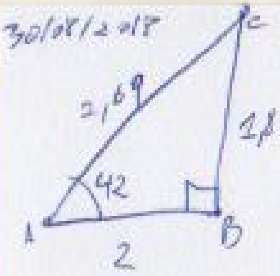
DISTANCE = 12 + 0 ...

0 → -15 = 15

15 + 12 = 27

$9 = 12 + 6 ...$

30/08/2018



$\sin(42) = \frac{O}{H}$

$\cos(42) = \frac{2}{H}$

$H = \frac{2}{\cos(42)}$

$H = 2{,}69126546$

$\angle C = 180 - 90 - 42 = 48 = \alpha$

$O = \sin(42) H \to \sin(42) \frac{2}{\cos(42)}$

$O = \cancel{2{,}69126546}\ 1{,}80080809$

$H^2 = O^2 + 2^2 = OK$ ✓

$2\sin(-x) + 2 = g(x)$

$\sin(x) = 2\pi$ (2π, 0)

$\sin(-x) = 2\pi$ (2π, 0) (π, 1)

(π, 1)

$2\sin(x) = 4\pi$ (0, 2) (4π,

sin(x)

15 ,, 22/03

RESUMO (08/2018 - AGOSTO)

01/08 - 07/08 = ~~...~~ 217 - 129 = 88

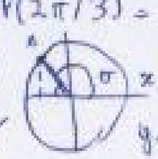
01/08 - 31/08 = 284 - 00 = 284

TOTAL = 88 + 284 = 372

$\frac{372\ ex}{23\ days} \approx 16$ ex/DAY

P157 a) $P(2\pi/3) = \frac{360}{3} = 120$

if $P(2\pi/3)$



$x = \cos(120°) = -\cos(60)$

$y = \sin(120°) = \sin 60 = \frac{\sqrt{3}}{2}$

✓

b) $P(-9\pi/4) = \frac{-9\pi}{4} \times \frac{180}{\pi} = \frac{-1620}{4\pi} = -405$

$-360 + (-45) = -405°$

$\alpha = 45°$

$\sin(\alpha) = \frac{\sqrt{2}}{2}$

$\cos(-45°) = \frac{\sqrt{2}}{2}$ $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$ ✓

P158

17/09/2018 EXPLORING ... P27

$3x + y - z = 2$

$2x \quad + 3z = 4$

$x + y - 5z = 7$

$$\begin{bmatrix} 3 & 1 & -1 & 2 \\ 2 & 0 & +3 & 4 \\ 1 & 1 & -5 & 7 \end{bmatrix}$$

$$\begin{pmatrix} a_1 \\ a_2 \\ \vdots \\ a_N \end{pmatrix} \quad (a_1, a_2, \ldots, a_N) \begin{pmatrix} b_1 \\ b_2 \\ \vdots \\ b_N \end{pmatrix} = (a_1b_1 + a_2b_2 + \ldots + a_Nb_N)$$

THE "SCALAR" IS THE NUMBER THAT RESULTS FROM THIS KIND OF PRODUCT, ALSO CALLED SCALAR PRODUCT OF TWO VECTORS.

Ex.: $(2\ 3\ 5)\begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix} = (2 - 3 + 10) = (9) = 9$

$F = (a_1, a_2, \ldots, a_N)$ $X = \begin{pmatrix} x_1 \\ x_2 \\ \vdots \end{pmatrix}$

SCALAR PRODUCT OF TWO VECTORS:

$FX = b$

IF x DOMAIN IS $\mathbb{R} \times \mathbb{R} \times \mathbb{R} \ldots \times \mathbb{R}$

b IS A N-TUPLE OF THE VECTORS

$F_1 X = b_1, F_2 X = b_2, F_m X = b_m$

m INDIVIDUAL EQUATIONS, WHOSE SOLUTION ARE DESIGNATED BY:

$S_1, S_2, \ldots, S_m$

SOLUTION SET = INTERSECTION

$S_1 \cap S_2 \cap \ldots \cap S_m$ Ex:

$2x_1 - 3x_2 + 4x_3 = 9,$

$x_1 + x_2 + x_3 = 1.$

$X = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 1 \\ -1 \\ 1 \end{pmatrix}$ TRANPOSE "T" $\begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \to (x_1\ x_2\ x_3)^T$