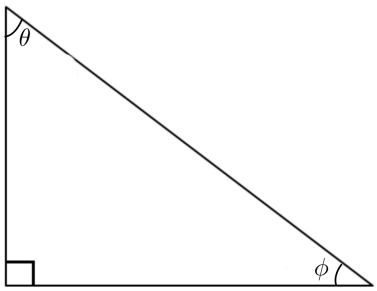
University/College/School Name
Institute Name
Departament Name
Prof. Name

Exam/Test 1 – Physics 101 – 01 Jan 2023

Any important message to students, if necessary

1. A particle of mass 5.3 kg is subject to an external force of 11.3 N. Calculate the acceleration in m/s^2 in a one-dimensional movement.
(a)2.1 (b)4.3
(c)11.2 (d)14.9
(e)8.4

2. Consider the rectangle triangle of the figure below and knowing $\theta = 14°$, determine ϕ **in rad**.



(a)1.164 (b)1.244 (c)1.026 (d)1.326 (e)1.120

3. Mark the true alternative.
(a) A vector multiplied by a scalar results is a vector with different direction.
(b) The result of a scalar product between vectors is a vector itself.
(c) Division between vectors is defined in Mathematics.
(d) The vectorial product between collinear vectors is zero.
(e) Vectors can not be multiplied by scalars.

Fórmulas e Constantes

$I = \dfrac{P_s}{4\pi r^2}; \quad E = hf; \quad p = \dfrac{hf}{c} = \dfrac{h}{\lambda}$

$hf = K_{\max} + \Phi; \quad \Delta\lambda = \dfrac{h}{mc}(1 - \cos\phi)$

$\dfrac{d^2\psi}{dx^2} + \dfrac{8\pi^2 m}{h^2}[E - U(x)]\psi = 0$

$T \approx e^{-2bL}$, onde $b = \sqrt{\dfrac{8\pi^2 m(U_b - E)}{h^2}}$

$E_n = \left(\dfrac{h^2}{8mL^2}\right) n^2$, para $n = 1, 2, 3 \ldots$

$\psi_n(x) = A \sin\left(\dfrac{n\pi}{L}x\right)$, para $n = 1, 2, 3 \ldots$

$\Delta x \Delta p = h/2\pi$

$\epsilon_0 = 8,854 \times 10^{12}$ F/m; $\quad \mu_0 = 1,257 \times 10^{-6}$ H/m

$c = 3,0 \times 10^8$ m/s; $\quad h = 6,63 \times 10^{-34}$ J/s $= 4,14 \times 10^{-15}$ eV.s

$hc = 1240$ eV.nm

Eletron : $\quad mc^2 = 511$ keV

Por exemplo, se seu número de matrícula for 12.1.3579, temos que

12.1.3579

1º 2º 3º 4º 5º 6º 7º

e a tabela deve ser preenchida assim:

xx	0	1	2	3	4	5	6	7	8	9
1°		■								
2°			■							
3°		■								
4°				■						
5°						■				
6°								■		
7°										■

NÃO MARCAR										
un	–	■	–	–	–	–	–	–	–	–
GABARITO										
–	1	2	3	–	–	–	–	–	–	–
a				–	–	–	–	–	–	–
b				–	–	–	–	–	–	–
c				–	–	–	–	–	–	–
d				–	–	–	–	–	–	–
e				–	–	–	–	–	–	–
MATRÍCULA										
–	0	1	2	3	4	5	6	7	8	9
1°										
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NOME:

MATRÍCULA: