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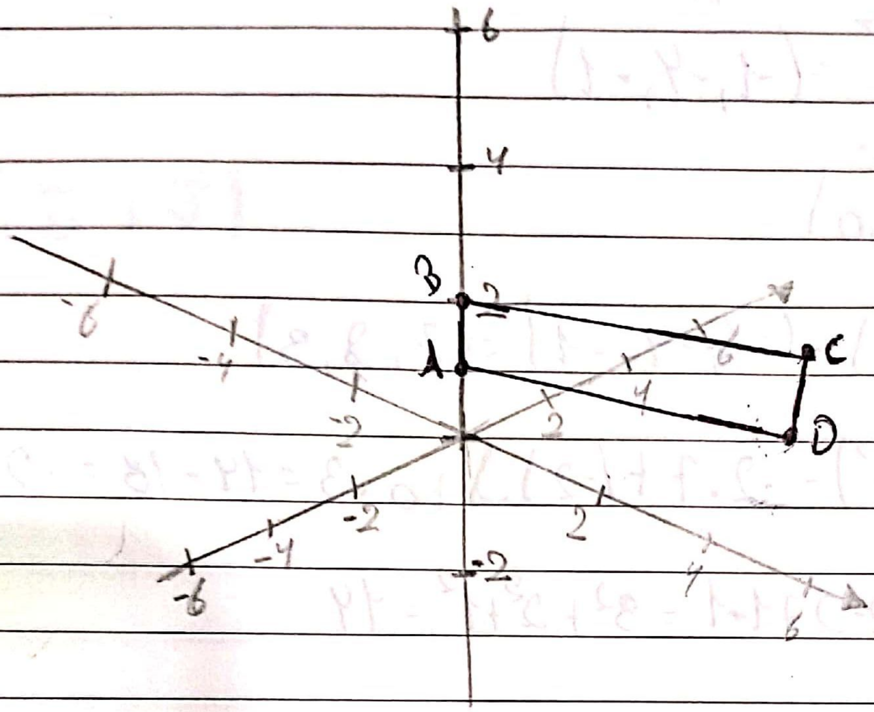
Geometria Analítica - Ciências da Computação

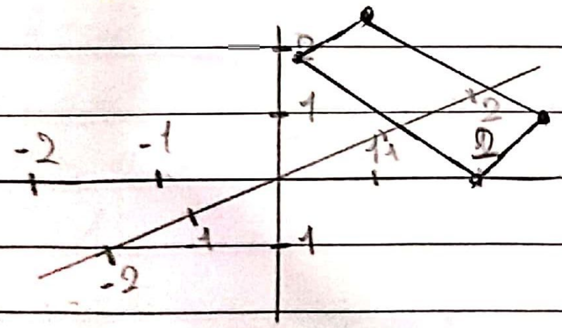
Igor Radtke

Lista 03

1-a) A(0,0,1), B(0,0,2), C(4,0,2) e D(4,0,1)



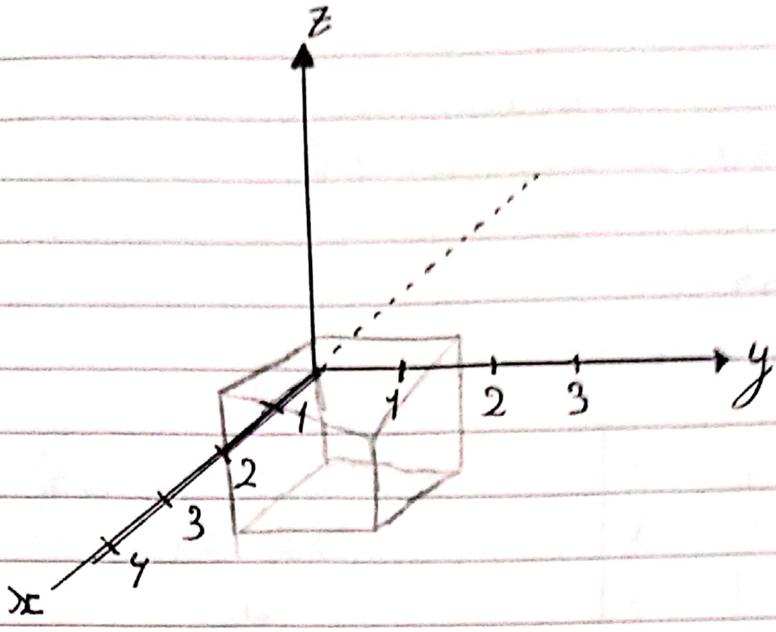
1-b) A(2,1,0), B(2,2,0), C(0,2,2) e D(0,1,2)



2- B(2,-2,2), C(3,-3,2), D(3,-1,2), E(3,-1,5)

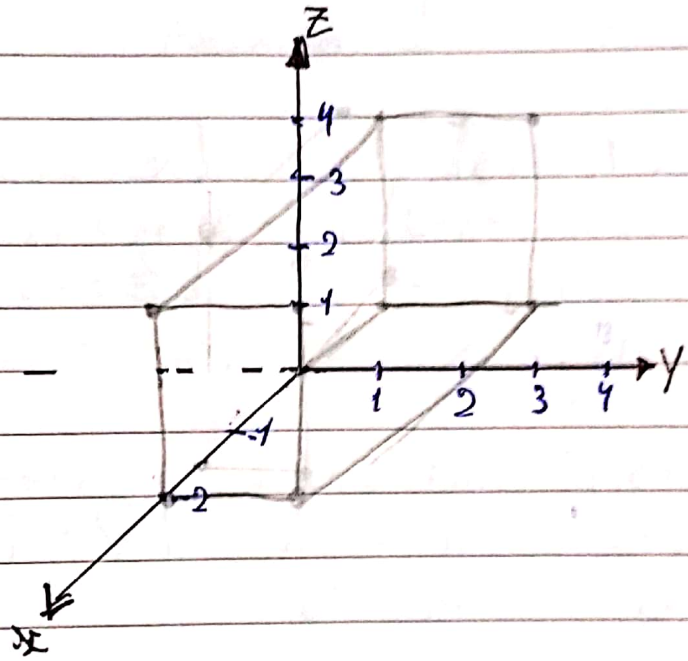
F(2,-1,5), G(2,-3,5), H(3,-3,5)

3 - a)



3 - b)

A = (0, 1, 1)
B = (0, 1, 4)
C = (0, 3, 1)
D = (0, 3, 4)



E = (3, 1, 1)
F = (3, 1, 4)
G = (3, 3, 1)
H = (3, 3, 4)

5 - a) $A + 3\vec{V}$

$A(2, -2, 3) + 3.(1, 3, -4) = A + 3\vec{V} = (2, -2, 3) + (3, 9, -12) =$

$(5, 7, -9)$

5 - b) $B + 2(B - A) = 3B - 2A = 3.(1, 1, 5) - 2.(2, -2, 3)$

$B + 2(B - A) = (3, 3, 15) - (4, -4, 6) = (-1, 7, 9)$

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6- a) $\det = -8+0+0-12-0-1 = -21 \neq 0$

Não é colinear.

6- b) $M = \begin{bmatrix} -1 & 4 & -3 \\ 2 & 1 & 3 \\ 4 & -1 & 7 \end{bmatrix}$

$-7+48+6+12-56-3$

$-66+66$

0

É colinear

7- $AB = (2, 1, -5) - (-1, -2, 3)$

$AB = (2-(-1), 1-(-2), -5-3)$

$AB = (2+1, 1+2, -8)$

$AB = (3, 3, -8)$

$\begin{cases} x = 2+3k \\ y = 1+3k \\ z = -5-8k \end{cases}$, sendo $k \in \mathbb{R}$.

$4-1 = 3k$

$3 = 3k$

$k = 1$

$m = 2+3.1$

$m = 2+3$

$m = 5$

$m = -5-8.1$

$m = -5-8$

$m = -13$

$\boxed{P = (5, 4, -13)}$

8- a) Um vetor é unitário de seu módulo for 1, então:

$|u| = \sqrt{1^2+1^2+1^2}$

$|u| = \sqrt{3}$ não é unitário

8- b) $|v| = \sqrt{\left(\frac{1}{\sqrt{6}}\right)^2 + \left(\frac{-2}{\sqrt{6}}\right)^2 + \frac{1}{\sqrt{6}}}$

$|v| = \sqrt{\frac{1}{6} + \frac{4}{6} + \frac{1}{6}}$

$|v| = \frac{\sqrt{6}}{6}$

$|v| = \sqrt{1}$

$|v| = 1$ vetor unitário

9 - a) $AB = (-2, 0, 0)$ $\quad AB + AC + AD + A$
$AC = (0, 0, 4)$
$AD = (0, -3, 0)$ $\quad (-2, -3, 4) + (3, 5, 0) = (1, 2, 4)$

9 - b) $AB = (3, -1, 2) - (-1, 2, 1) = (4, -3, 1)$
$AC = (4, 1, -3) - (-1, 2, 1) = (5, -1, -4)$
$AD = (0, -3, 1) - (-1, 2, 1) = (1, -5, 0)$

$A = (-1, 2, 1) + (4, -3, -2) + (5, -1, -4) + (1, -5, 0) = (9, -7, -5)$

4- $(1, -1, 3) + (0, 0, 0) = 0 (1, -1, 3)$

$(1, -1, 3) + (-3, -4, 0) = B (-2, -5, 3)$

$(1, -1, 3) + (-2, 4, 2) = C (-1, 3, 5)$