

Homework 1

1. Find the vector \mathbf{x}

if: $(1, 2, 3, 0) + 2\mathbf{x} = (-1, 0, 1, 6)$

2. Find the vector C , if BC is three times shorter than AB .

$A = (-1, 5, 1)$

$B = (2, 2, -2)$

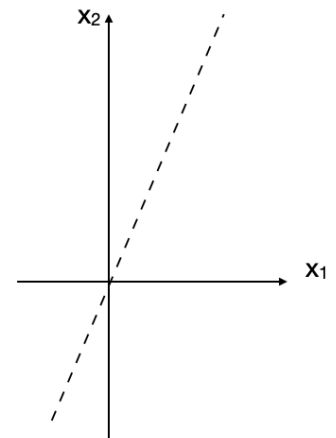
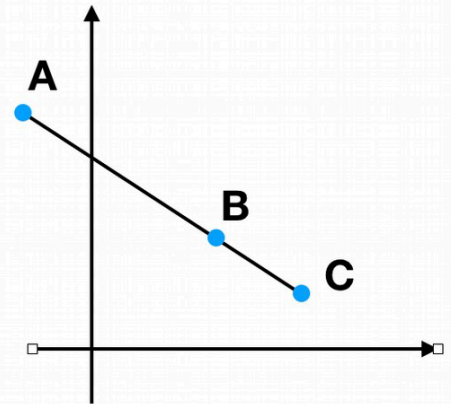
3. A line comes through

$V_1 = (1, 1, 3)$

$V_2 = (2, 0, -1)$

Does the point $(1, 2, 1)$ belong to the given line?

4. We have got a set of vectors in the two-dimensional vector space. All these vectors belong to the line $x_2 = 2x_1$ shown as a dotted line. Does this vector set form a linear space?

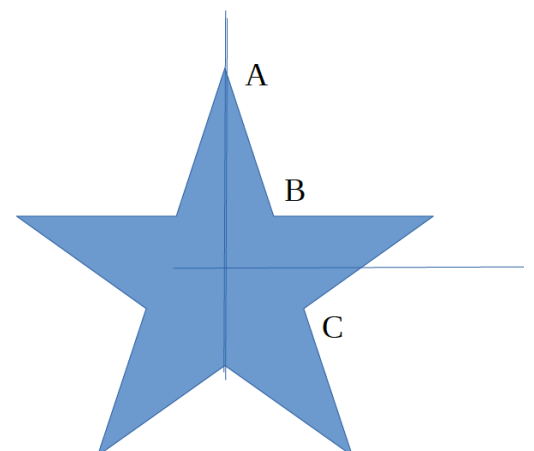


5. Optional:

Find the vectors B and C if $A = (0, 1)$

hint: it is known that AB and BC make a “golden ratio”.

https://en.wikipedia.org/wiki/Golden_ratio



6. Optional:

Find the point of intersections of two
tangent lines as shown in the figure for
any given centers of the circles c_1 and c_2 ,
if $r_1 / r_2 = 3$.

