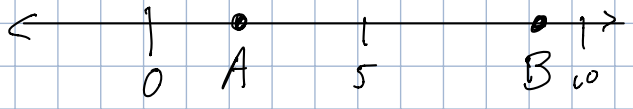
(p.1)

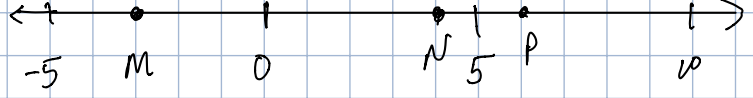
Posn Math: We write + and − but think posn-add and posn-subtract. Also, abs is posn-length.

① Intro



(i) Mark $C = A + 3$. How would you describe the motion from A to C?
(ii) Draw arrow from A to B on the number line.
(iii) What number represents the arrow?
(iv) Is that the same as A−B?
(v) no? what arrow would you draw for A−B?

②



(i) Describe the motion of P to (+ P M)

(ii) Draw (− M N) as an arrow on the number line.

(iii) If these were posns, what do you think (posn-length (posn-subtract M N)) would be?

(iv) Write an expression to move

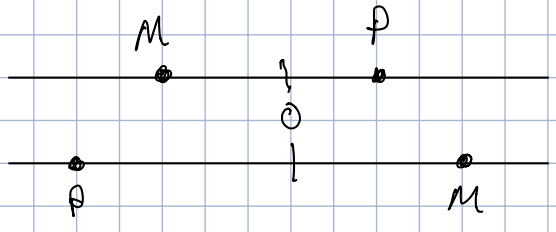
a) from M to P
b) from N to M

③ i) Write an expression that always results in a point four units to the right of point M (wherever M is)

ii) what do you need to add to M in order to move it to point P?

iii) what expression would you add to M to move it one unit toward P?

iv) Verify your method works

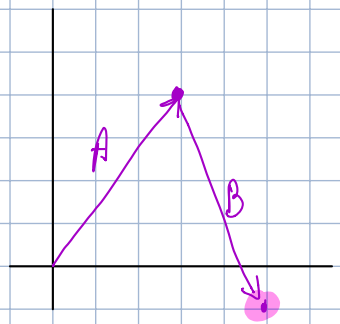


Posn Math (page 2)

① $A = (3, 4)$
$B = (2, -5)$

(i) (posn-add A B)

(ii)



Where is the end point?

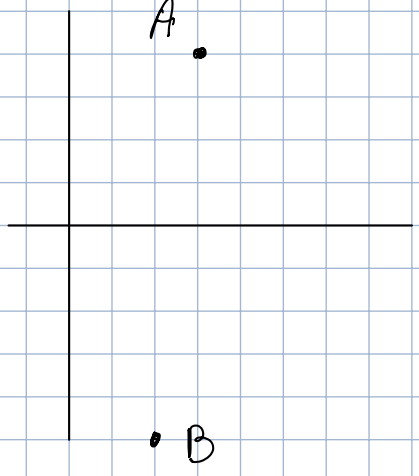
(_ , _)

(iii) Summarize what does (posn-add A B) do geometrically?

(iv) (posn-subtract A B)

maybe only "posn-sub" for you

(v)



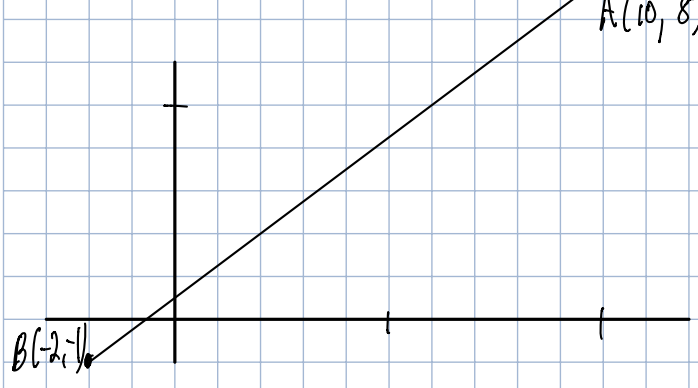
Draw the arrow from B to A.

(vi) How would you represent B→A as a posn?

(make-posn _ _)

(vii) What does (posn-subtract A B) tell you geometrically?

Important Question: What is the relationship between posn-subtract and slope?



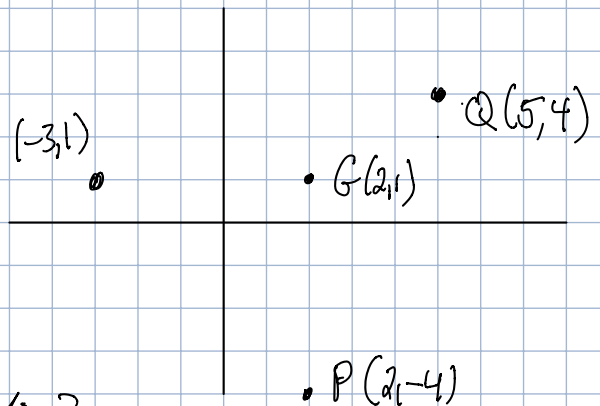
(i) find the slope of line $\overline{AB}$

(ii) find (posn-subtract A B)

(iii) Can you tell using the slope (i) if A is to the right of B? How about using (ii)?

Posn Math (page 3)

(I) Acting like zero.



1. geometrically, what motion moves G to the origin (0,0)?

2. Algebraically, how would you perform that motion?

3. Measure the slopes
   (a) QR
   (b) Q'R' after moving according to the transformation (1)

⇒ 4. What effect does the transformation (1) or (2) have on slopes?

5. measure the distances
   (a) PG
   (b) P'G' after moving according to the transformation (1)

⇒ 6. What effect does the transformation (1) or (2) have on distances?

(II) Moving the origin

After you have done all of the work with an origin at (0,0), what should you do to reposition all of your posns so they act like (100, 75) is the origin?

(III) Skip

* Advanced: C = (2, 1)
  D = (11, 13)

We want to go 1 units from C towards D. How?

What about 5 units from C towards D?