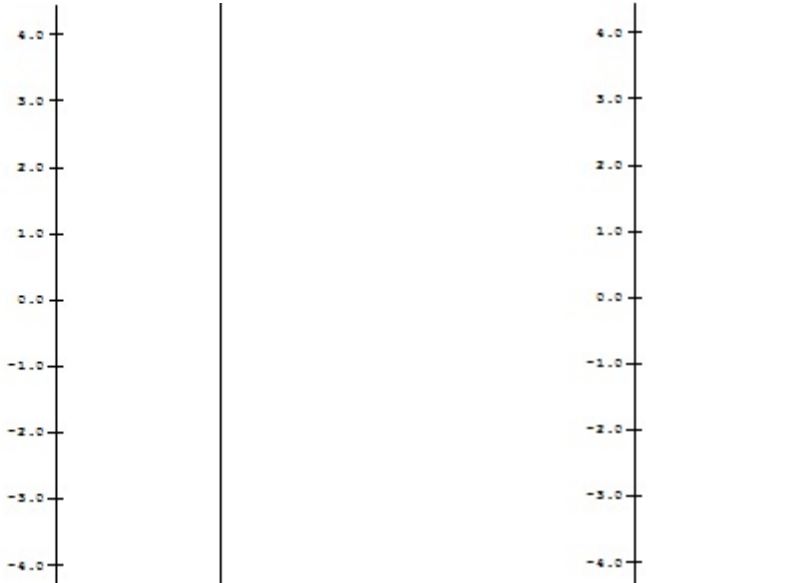


1.

- a. Complete the following tables for
- $m(x) = 2x$
- and
- $s(x) = x + 1$

$x$	$m(x) = 2x$	$s(x) = x + 1$
2		
1		
0		
-1		
-2		

- b. Using the data from part a), on separate diagrams sketch mapping diagrams for
- $m(x) = 2x$
- and
- $s(x) = x + 1$

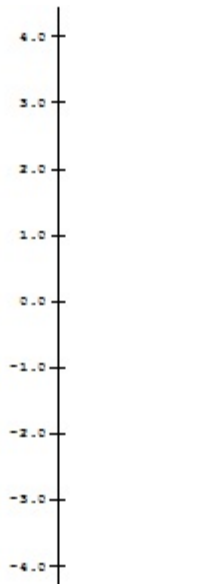


2. Let  $q(x) = x^2$ .

a. Complete the following table for  $q(x) = x^2$ .

$x$	$q(x) = x^2$
2	
1	
0	
-1	
-2	

b. Using the data from part a), sketch a mapping diagram for  $q(x) = x^2$ .



3.

- a. Complete the following table for the composite function  $f(x) = s(m(x)) = 2x + 1$ .

$x$	$m(x) = 2x$	$s(m(x)) = 2x + 1$
2		
1		
0		
-1		
-2		

- b. Use the table and the previous sketches of 1.b to draw a composite sketch of the mapping diagram with 3 axes for the composite function  $f(x) = s(m(x)) = 2x + 1$

- c. Draw a sketch for the mapping diagram with 2 axes of  $f(x) = 2x + 1$ .

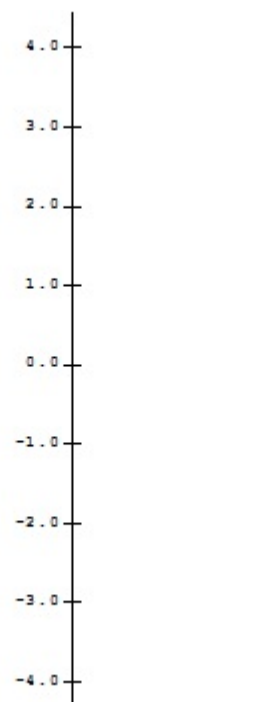
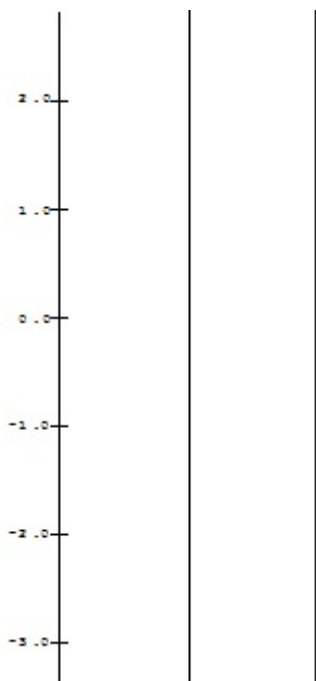


4. Let  $q(x) = x^2$  and  $R(x) = s(q(x)) = x^2 + 1$ .

a. Complete the following tables for  $q(x) = x^2$  and  $R(x) = s(q(x)) = x^2 + 1$

$x$	$q(x) = x^2$	$R(x) = s(q(x)) = x^2 + 1$
2		
1		
0		
-1		
-2		

b. Using the data from part a), on separate diagrams sketch mapping diagrams for the composition  $R(x) = s(q(x)) = x^2 + 1$  with three axes and then two axes.



## 5. Solving Equations:

- a. Use a standard algebraic approach to solve the following equation. Show all steps. Check your answer.

$$2x + 1 = 5.$$

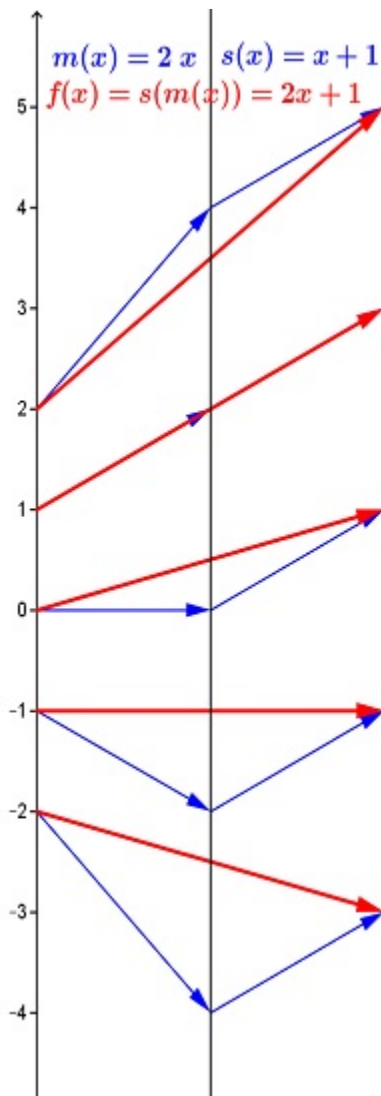

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Work:

Check:

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- b. On the mapping diagram below indicate by adding and circling numbers and arrows how the diagram visualizes the work in your algebraic solution of  $2x + 1 = 5$ .



6. Solve  $2(x-3)^2 + 1 = 9$  with a mapping diagram.
- a. Express  $f(x) = 2(x-3)^2 + 1$  as composition of core functions.  
 $f(x) = h(m(q(z(x))))$  where

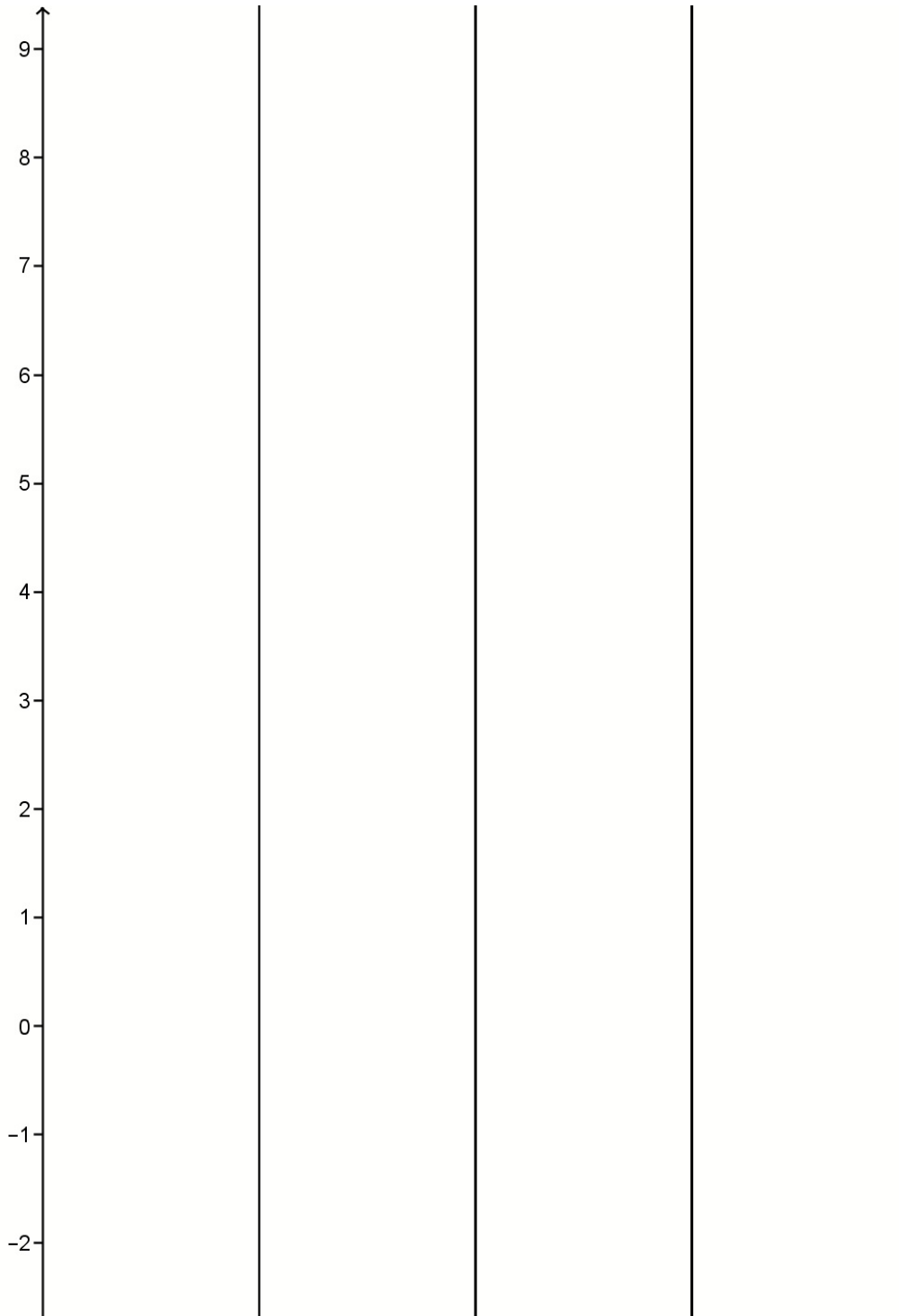
$$h(x) = \underline{\hspace{2cm}}$$

$$m(x) = \underline{\hspace{2cm}}$$

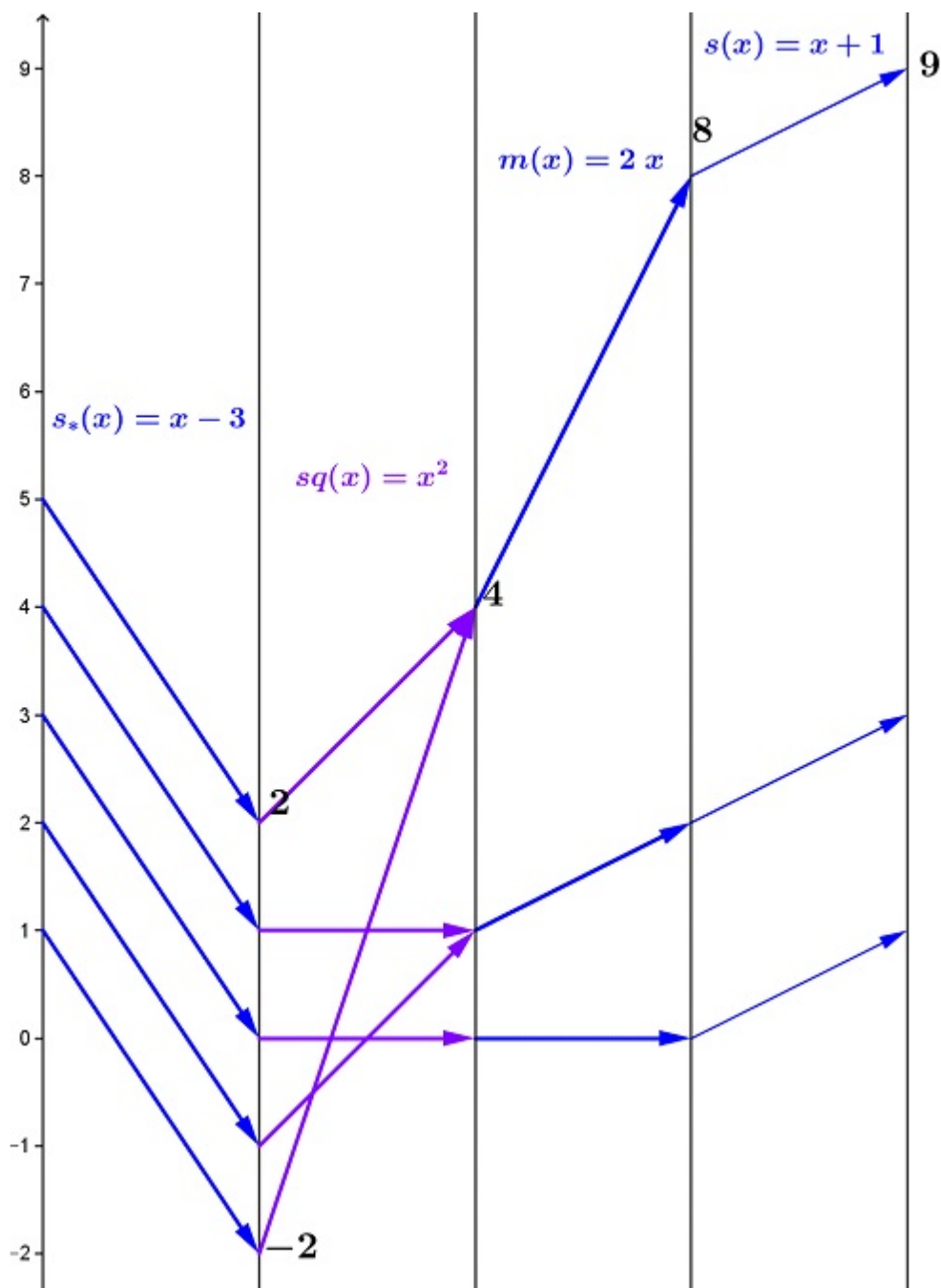
$$q(x) = \underline{\hspace{2cm}}$$

$$z(x) = \underline{\hspace{2cm}}$$

- b. Sketch a mapping diagram for  $f$  as a composition.



- c. On the mapping diagram below indicate by circling numbers and arrows how the diagram visualizes the solution of  $2(x-3)^2 + 1 = 9$ . **Check the solutions.**



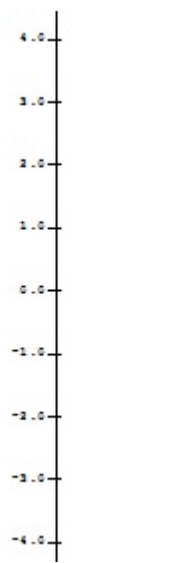
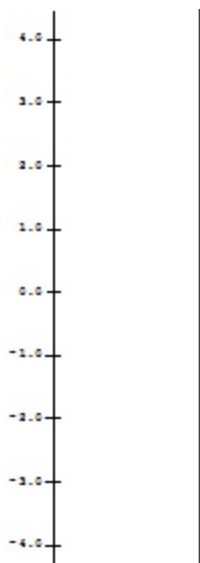
Check :

7. Let  $f(x) = mx + b$  sketch mapping diagrams for the following:

Use the same scale for the second axis.

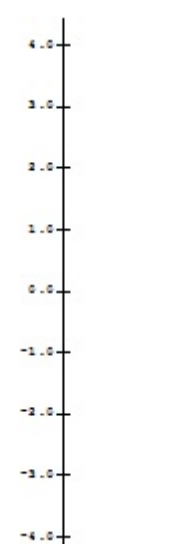
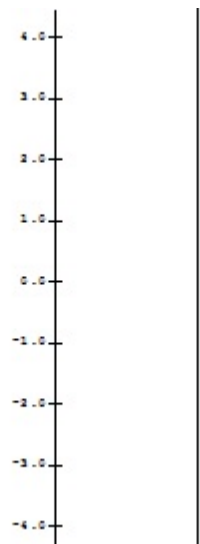
a.  $m = -2; b = 1: f(x) = -2x + 1;$

d.  $m = 0; b = 1: f(x) = 0x + 1$

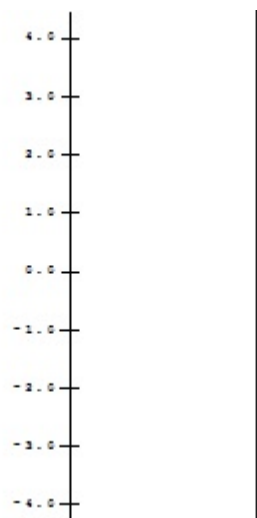


b.  $m = 2; b = 1: f(x) = 2x + 1$

e.  $m = 1; b = 1: f(x) = x + 1$



c.  $m = \frac{1}{2}; b = 1: f(x) = \frac{1}{2}x + 1$

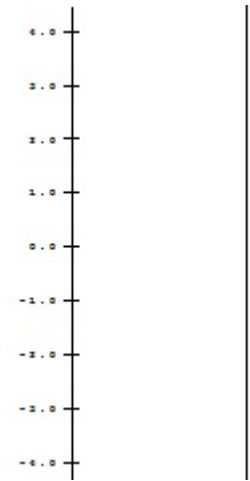




8.

a. Use a focus point in the mapping diagram to solve a linear equation:

$$2x + 1 = 5.$$



Suppose  $f$  is a linear function with  $f(1) = 3$  and  $f(3) = -1$ . Without algebra

- b. Use a focus point to find  $f(0)$ .
- c. Use a focus point to find  $x$  where  $f(x) = 0$ .

