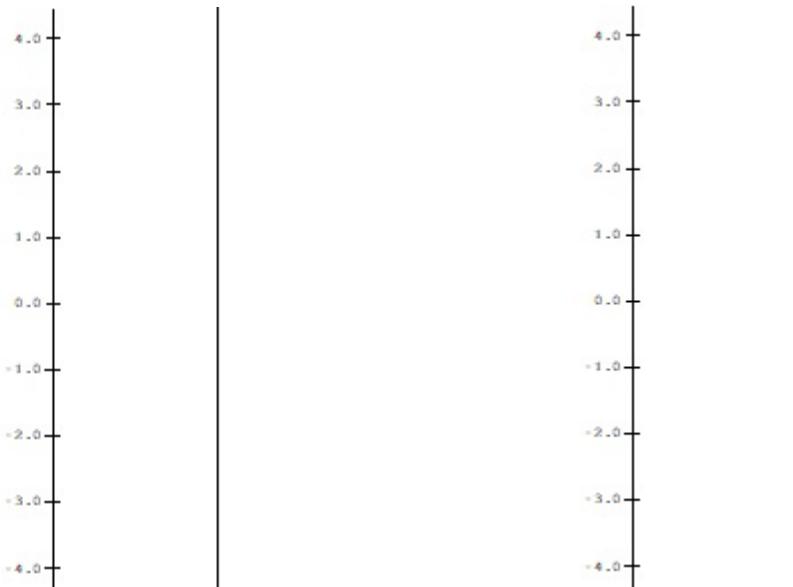

1.

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 $q(x) = x^2$.



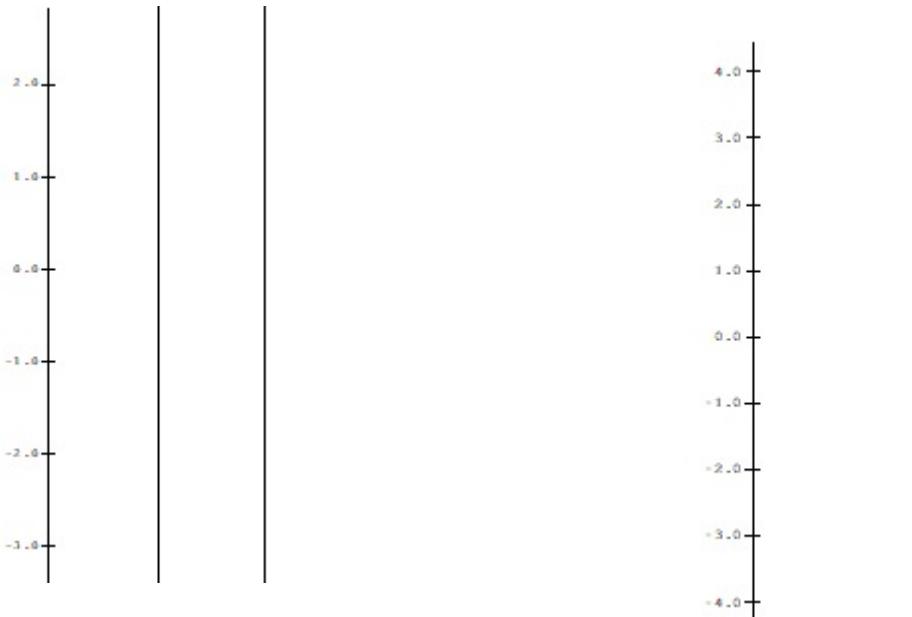
3.

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 $f(x) = 2x + 1$.

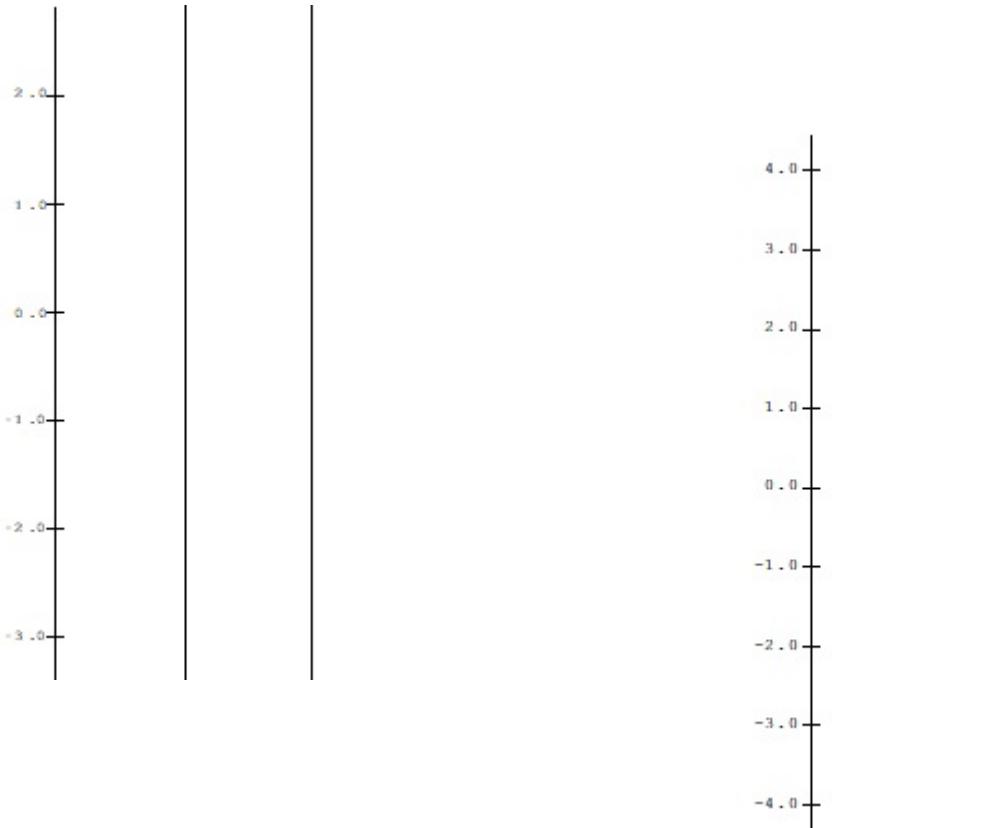


4. Let $q(x) = x^2$ and $R(x) = s(q(x)) = x^2 + 1$.

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:

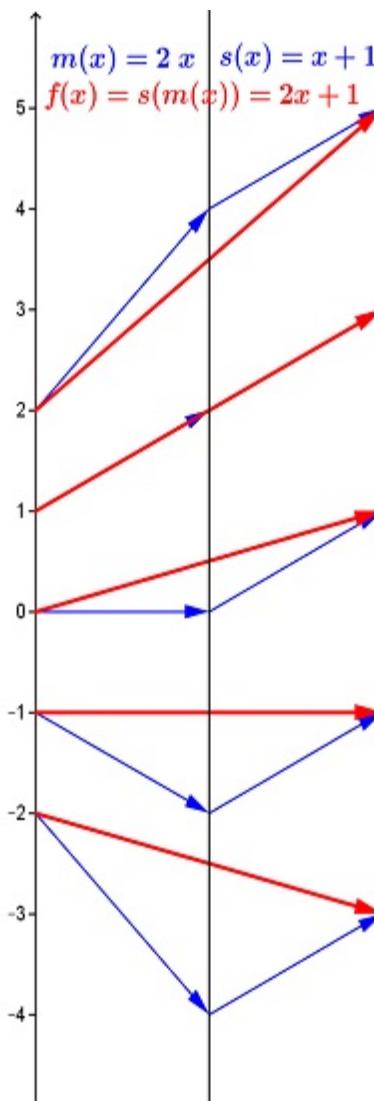
a. Use a standard algebraic approach to solve the following equation. Show all steps.
Check your answer.

$$2x + 1 = 5.$$

Work:

Check:

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. Solving $2(x-3)^2 + 1 = 9$ with a mapping diagram.

a. Express $f(x) = 2(x-3)^2 + 1$ as composition of core linear and quadratic functions.

$$f(x) = h(m(q(z(x)))) \text{ where}$$

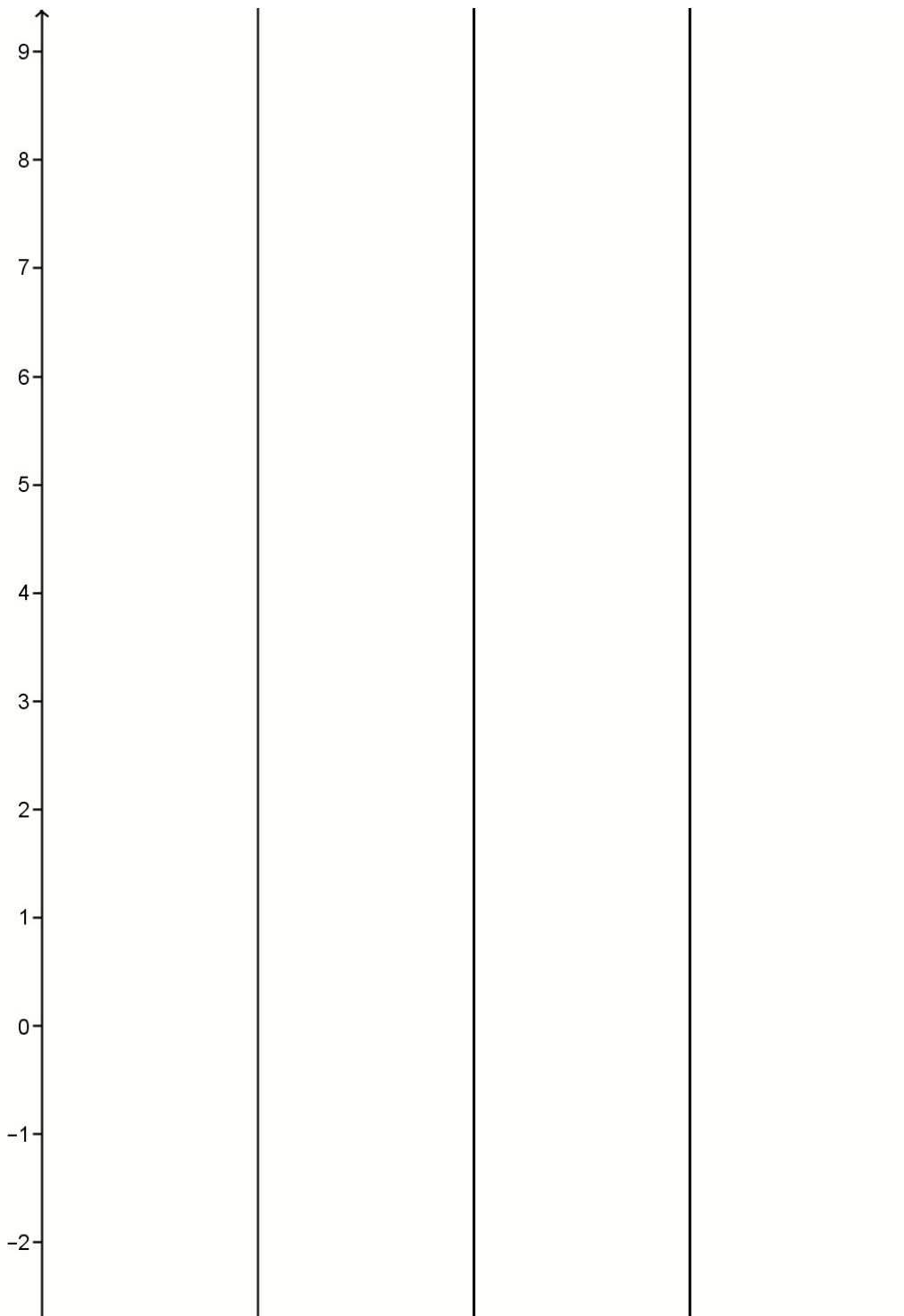
$$h(x) = \underline{\hspace{2cm}}$$

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

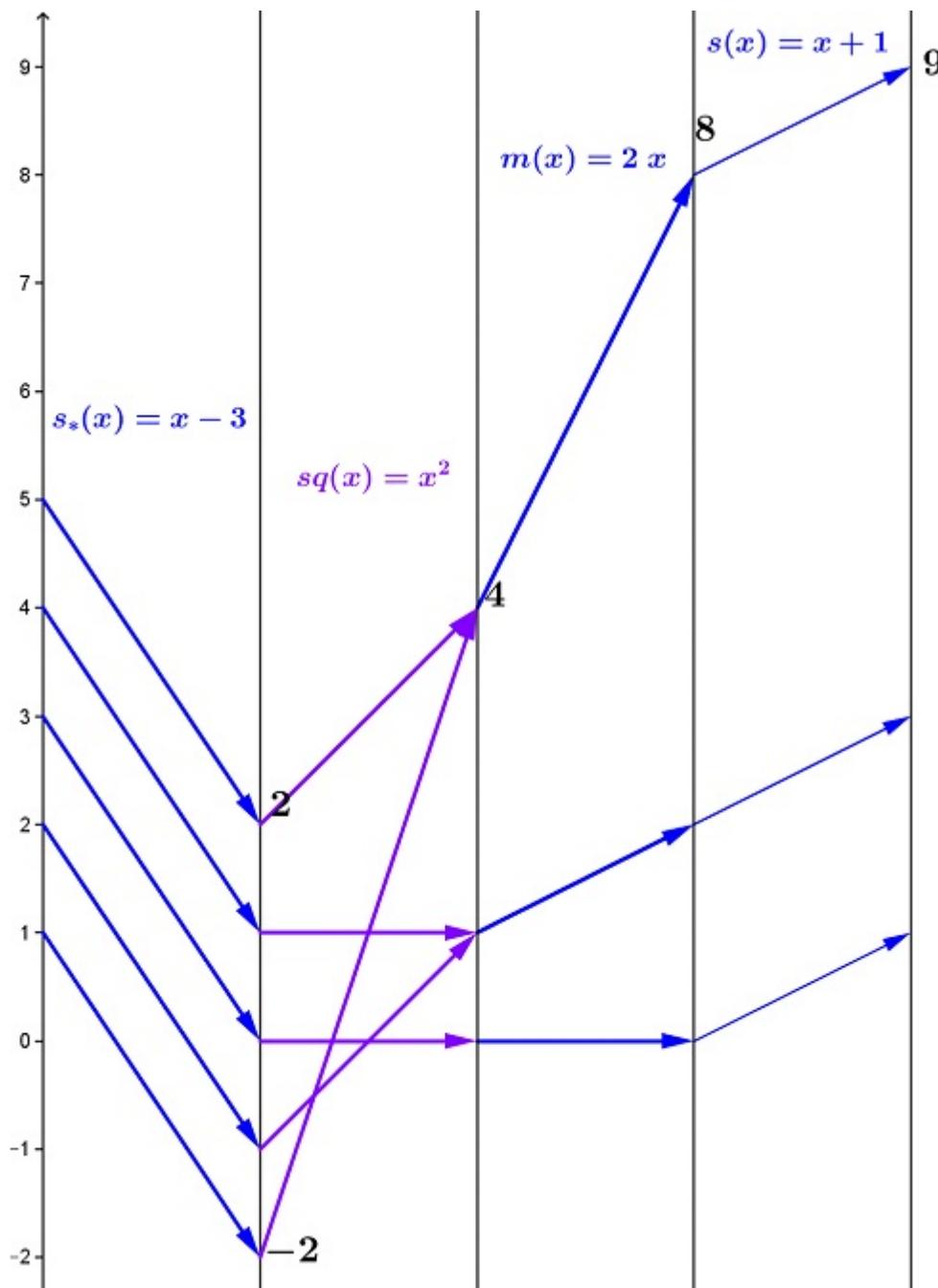
$$q(x) = \underline{\hspace{2cm}}$$

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

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 $f(z) = z^2 + 1$.a. Complete the following table for f :

$f(a+bi)$	-1	0	1
i	$f(-1+i) =$	$f(i) =$	$f(1+i) = 1+2i$
0	$f(-1) = 2$	$f(0) = 1$	$f(1) = 2$
$-i$	$f(-1-i) =$	$f(-i) =$	$f(1-i) =$

b. Sketch a mapping diagram for the table data below on the pair of complex planes.

