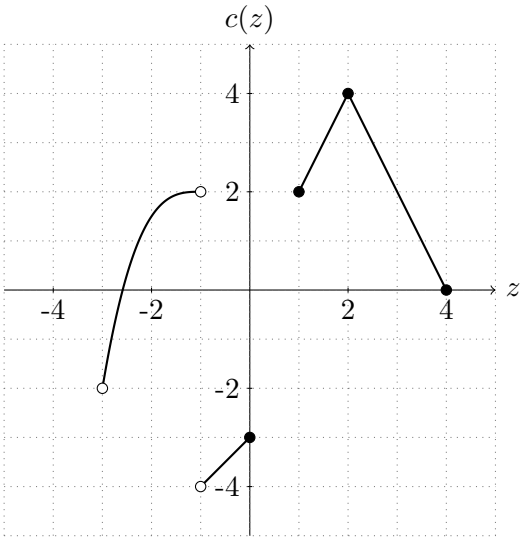
3. [14 points] Consider the functions $a(y)$, $b(w)$ and $c(z)$ given below.

y	-10	-4	-1	1	3	4
$a(y)$	4	-2	2	-4	0	3

$$b(w) = \begin{cases} 1.5w + 8 & \text{for } -5 \le w < -1 \\ -4 \cdot 2^{-w} & \text{for } 1 \le w \le 5. \end{cases}$$



a. [3 points] Find the domain of $c(z)$. Express your answer in interval notation or using inequalities.

The domain of $c(z)$ is $(-3,-1) \cup (-1,0] \cup [1,4]$

b. [3 points] Find the range of $b(w)$. Express your answer in interval notation or using inequalities.

The range of $b(w)$ is $[-2,-1/8] \cup [1/2,13/2)$

c. [4 points] Calculate the following or write "UNDEFINED" if the quantity is not defined. Simplify your answer.

(i) $(a(-1))^{-1} =$ $1/2$

(ii) $a(a(-10)) =$ 3

(iii) $c(b(-5) + 2.5) =$ 2

(iv) $b^{-1}(2) =$ -4

d. [4 points] Using only the information given, find all solutions to each of the equations below. Simplify your answers, but leave them in **exact** form. If an equation has no solution, write "NO SOLUTION" in the blank.

(i) $c(a(y)) = 2$.

$y =$ 4

(ii) $b(w) = a(3)$.

$w =$ NO SOLUTION