

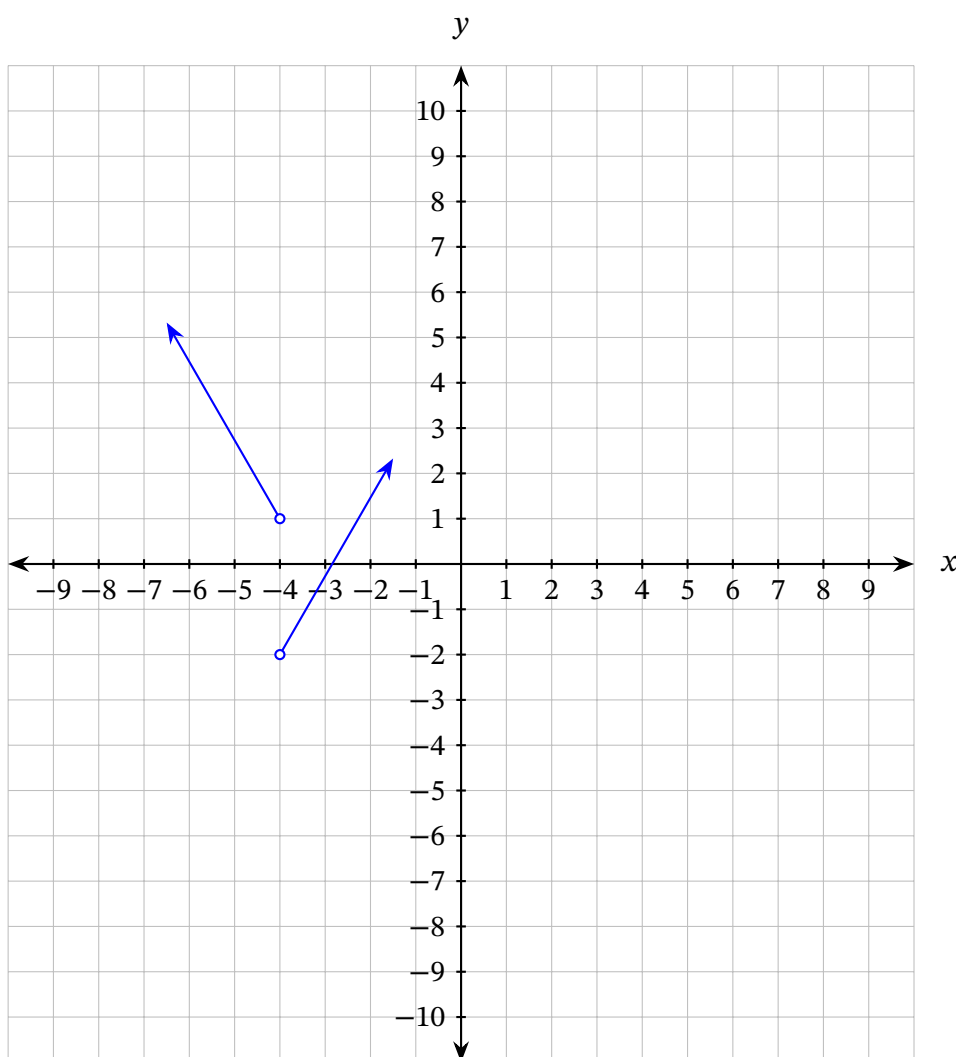
Worksheet: Graphing Piecewise Functions



In this worksheet, we will practice analyzing a piecewise-defined function, graph it, find its domain and range, and write the equation that represents it from its graph.

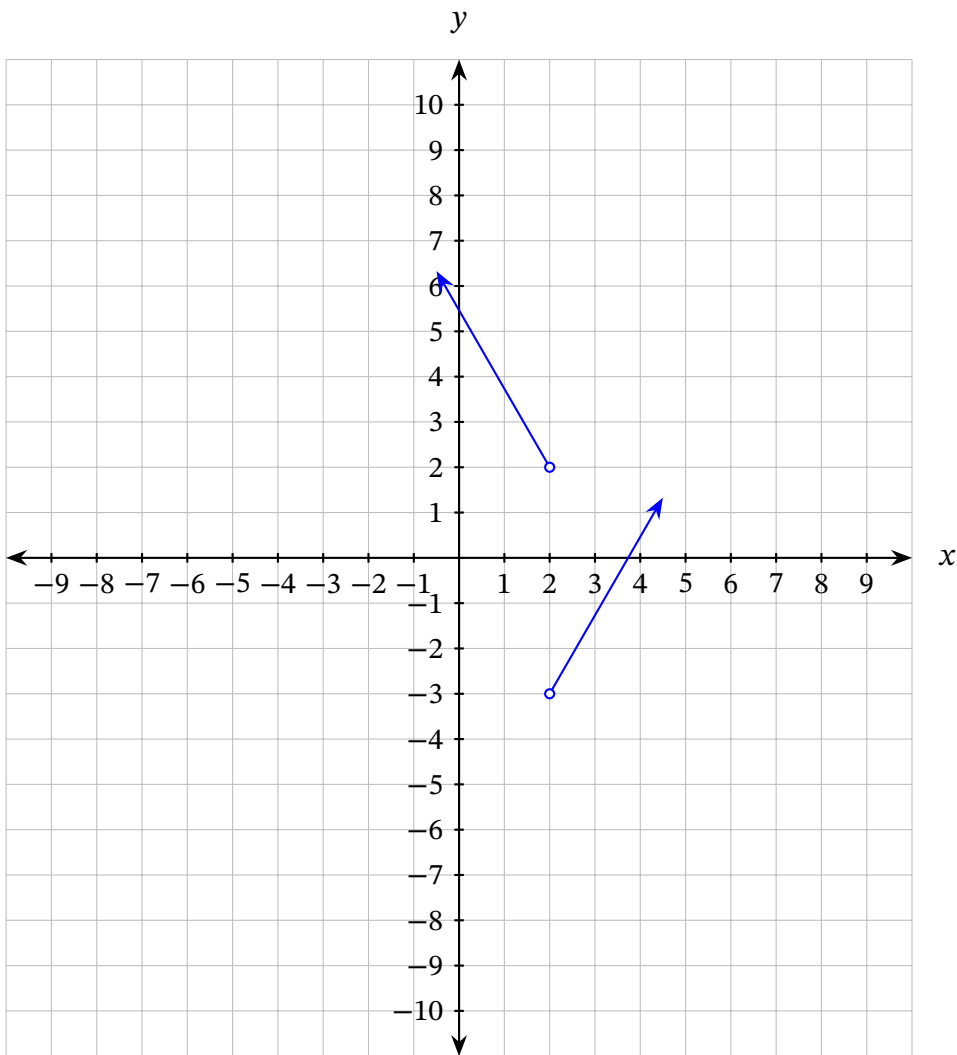
Q1:

Determine the domain of the function represented by the given graph.



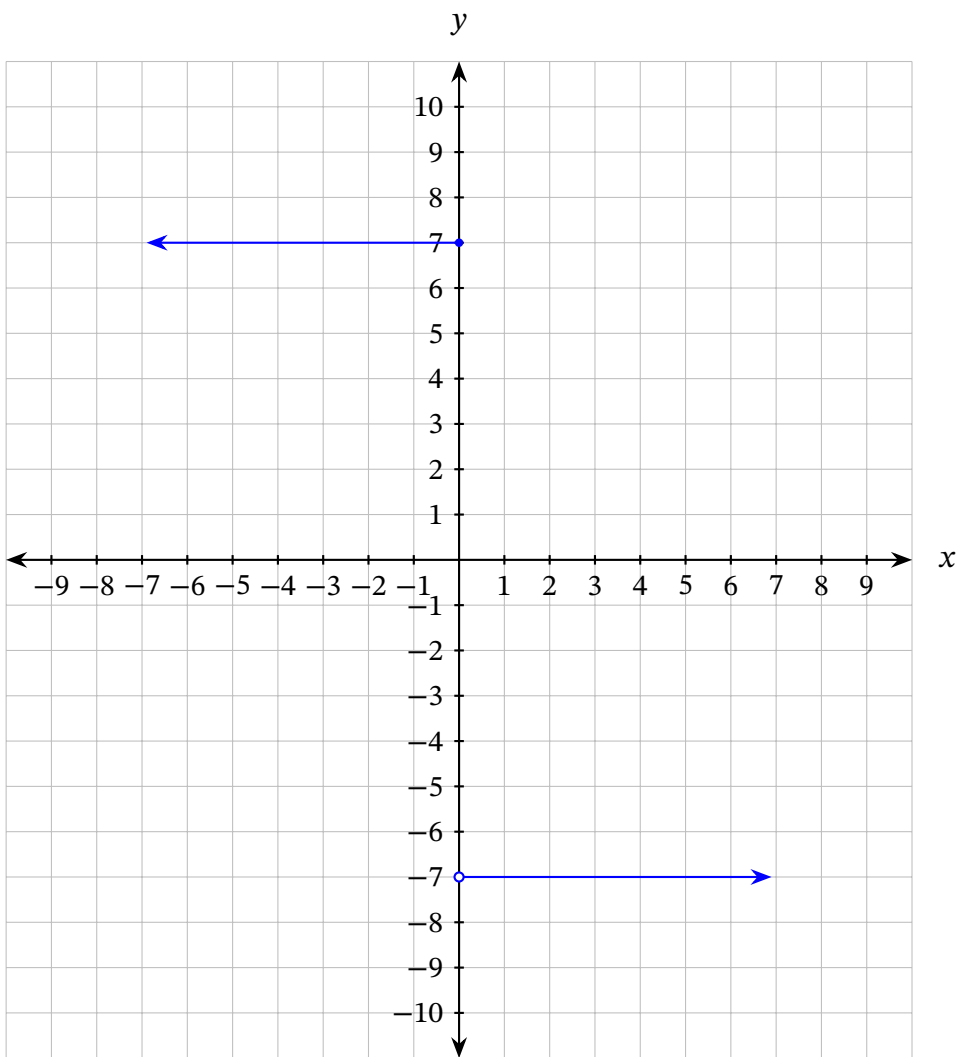
Q2:

Determine the domain of the function represented by the given graph.



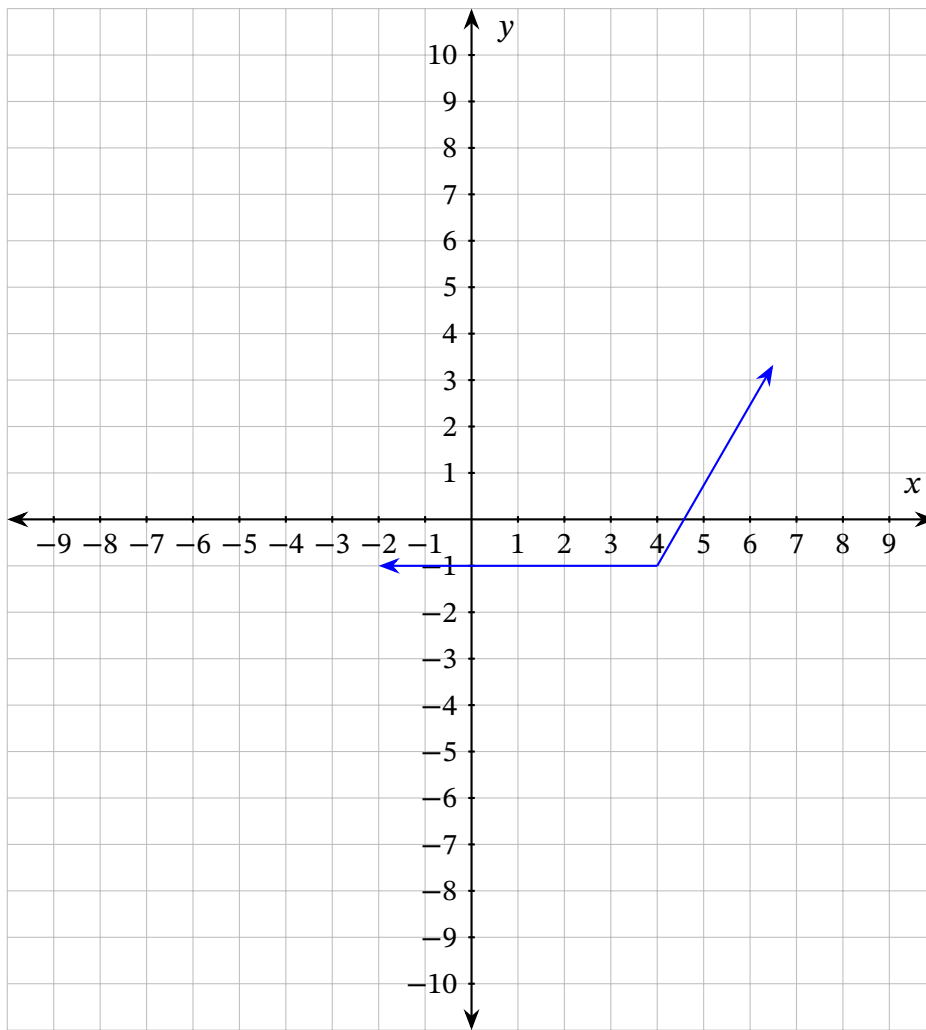
Q3:

Determine the domain of the function represented by the given graph.



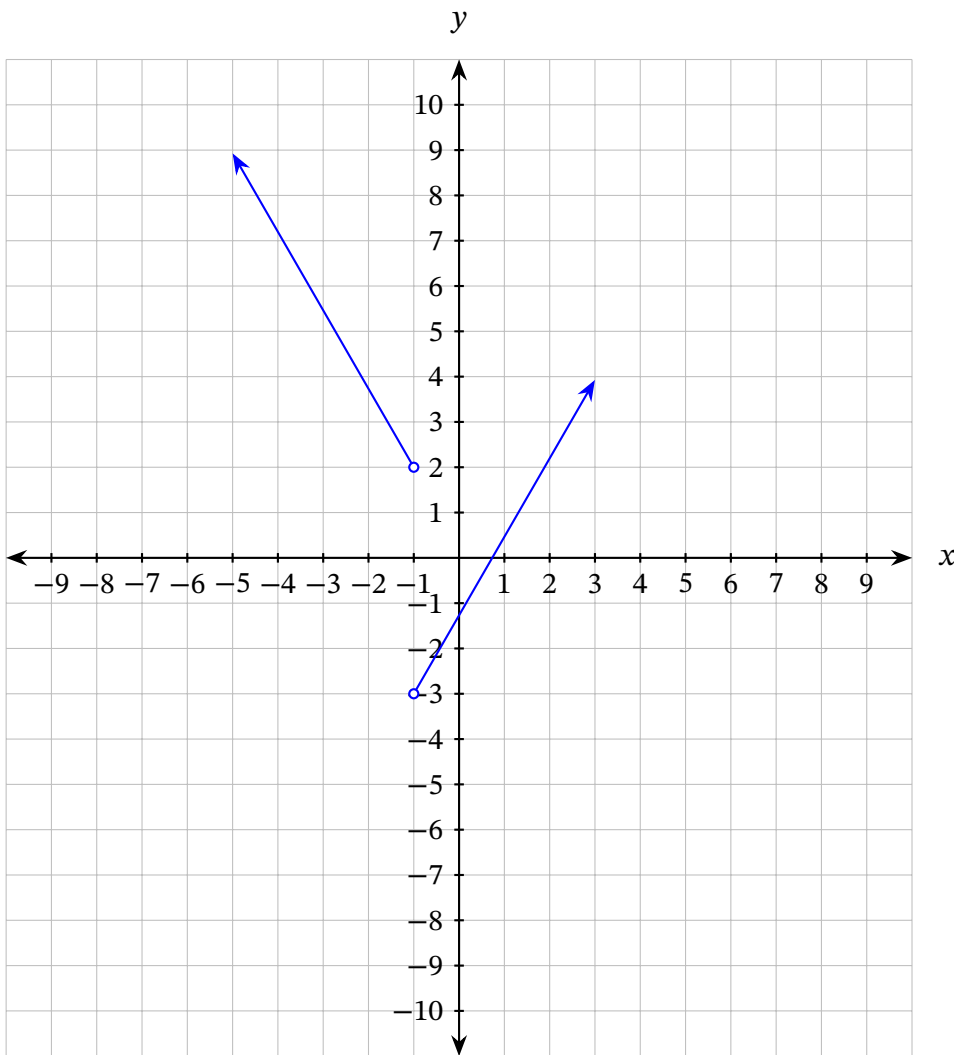
Q4:

Find the range of the function.



Q5:

Determine the range of the function represented by the following graph.



Q6:

Find the domain of the real function

$$f(x) = \begin{cases} 1 & \text{if } x < 7, \\ -24 & \text{if } x \geq 7. \end{cases}$$

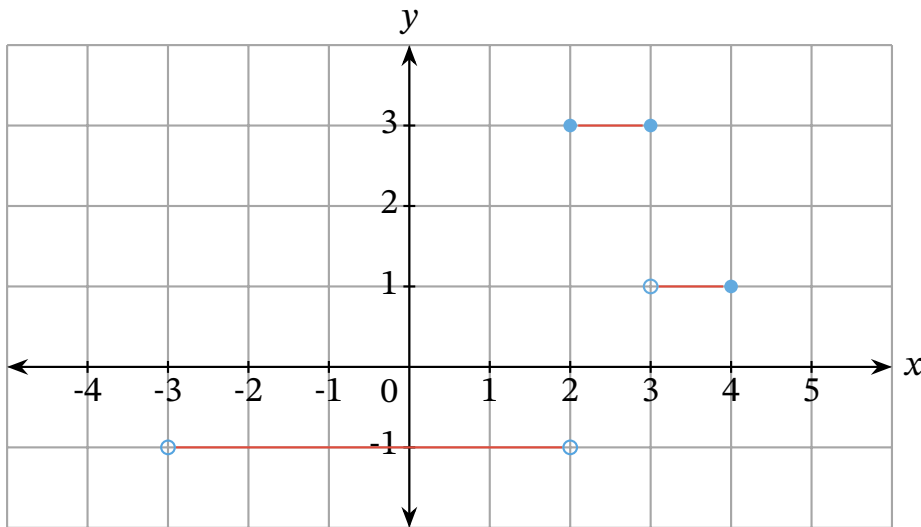
Q7:

Find the domain of the real function

$$f(x) = \begin{cases} -5 & \text{if } x \leq 1, \\ 25 - x & \text{if } x > 1. \end{cases}$$

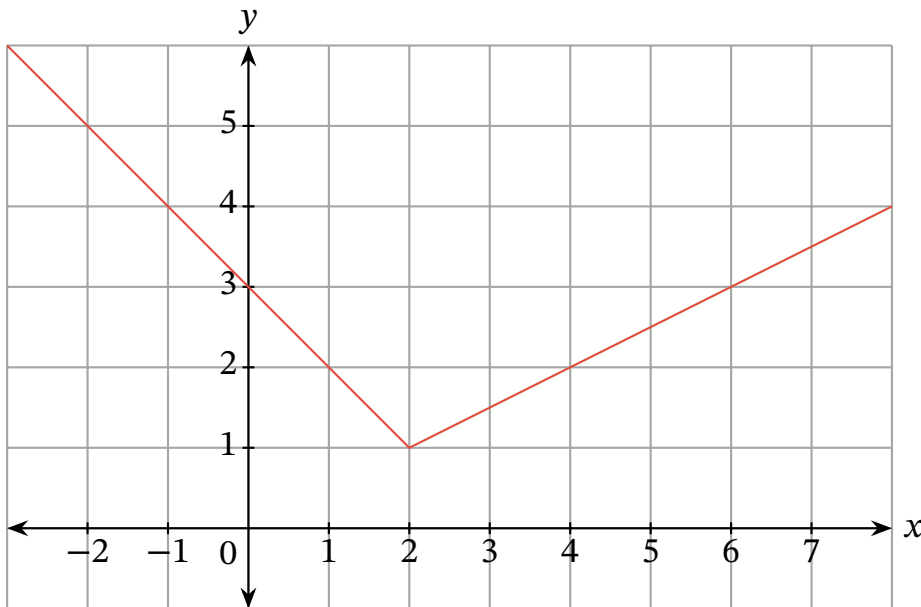
Q8:

Give the piecewise definition of the function f whose graph is shown.



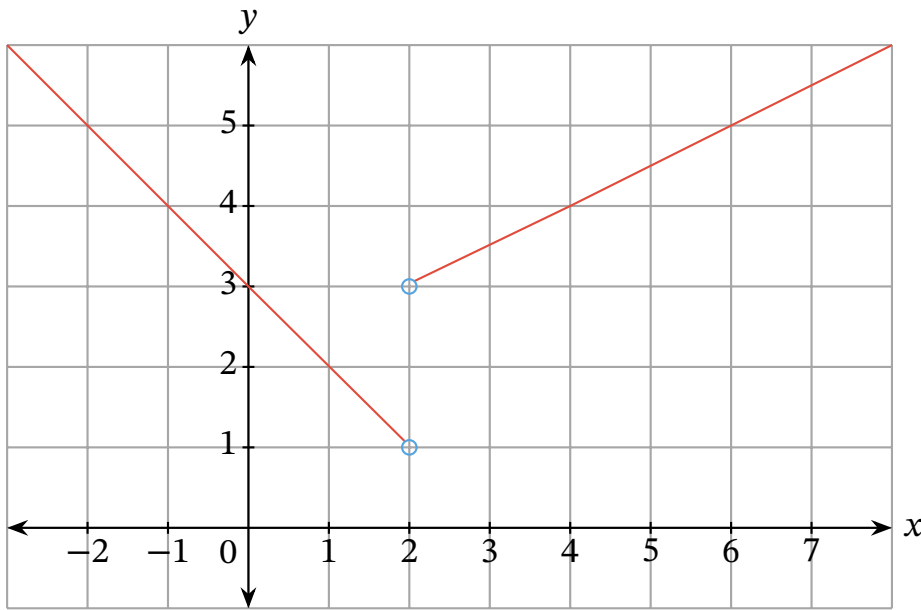
Q9:

Give the piecewise definition of the function h whose graph is shown.



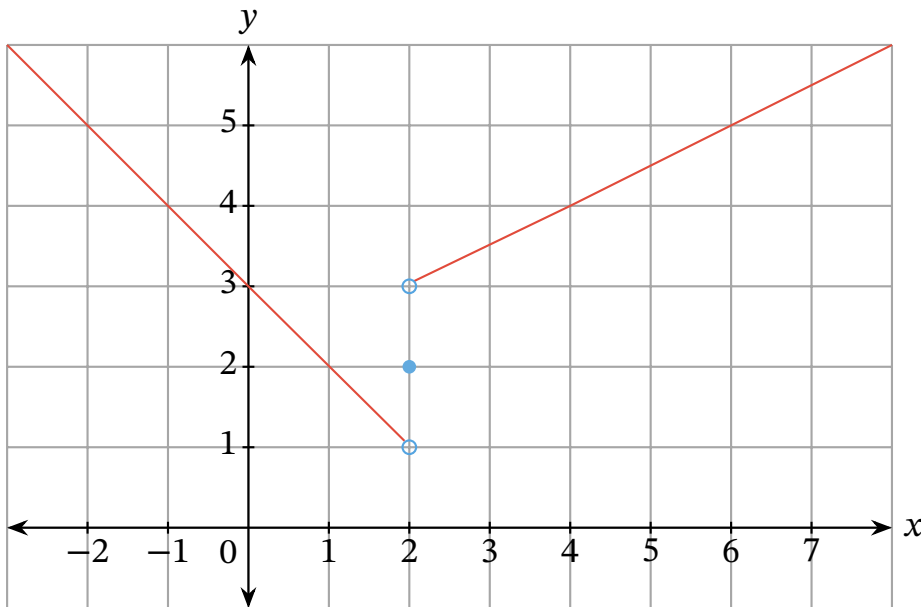
Q10:

Give the piecewise definition of the function p whose graph is shown.

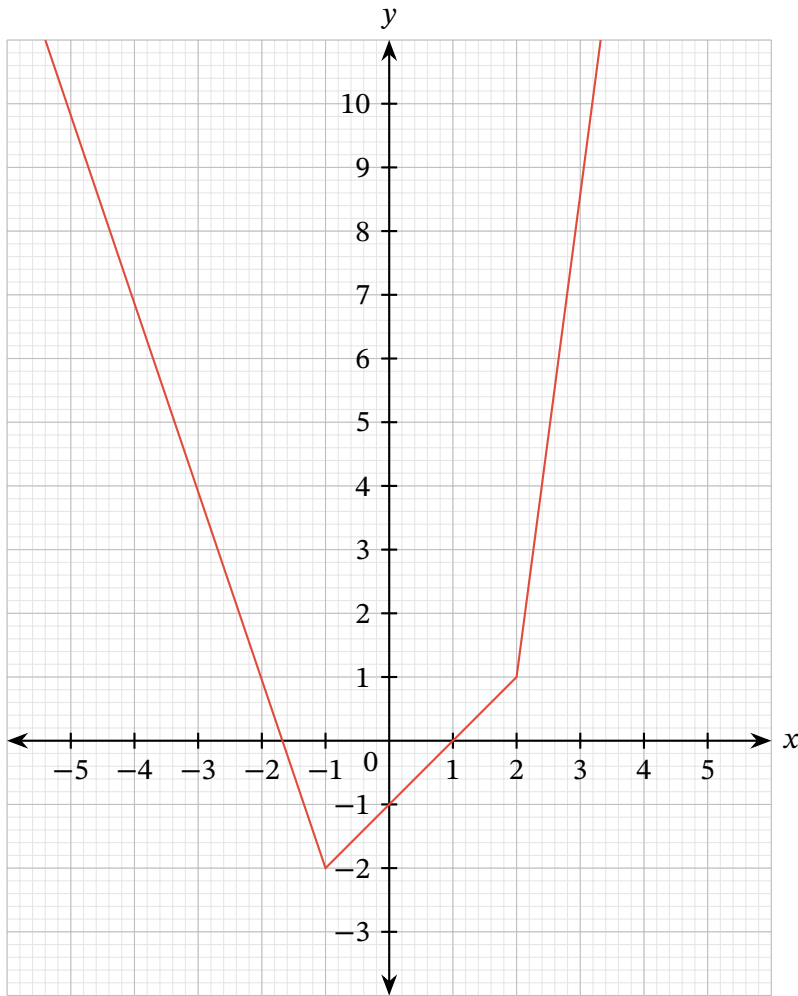


Q11:

Give the piecewise definition of the function f whose graph is shown.



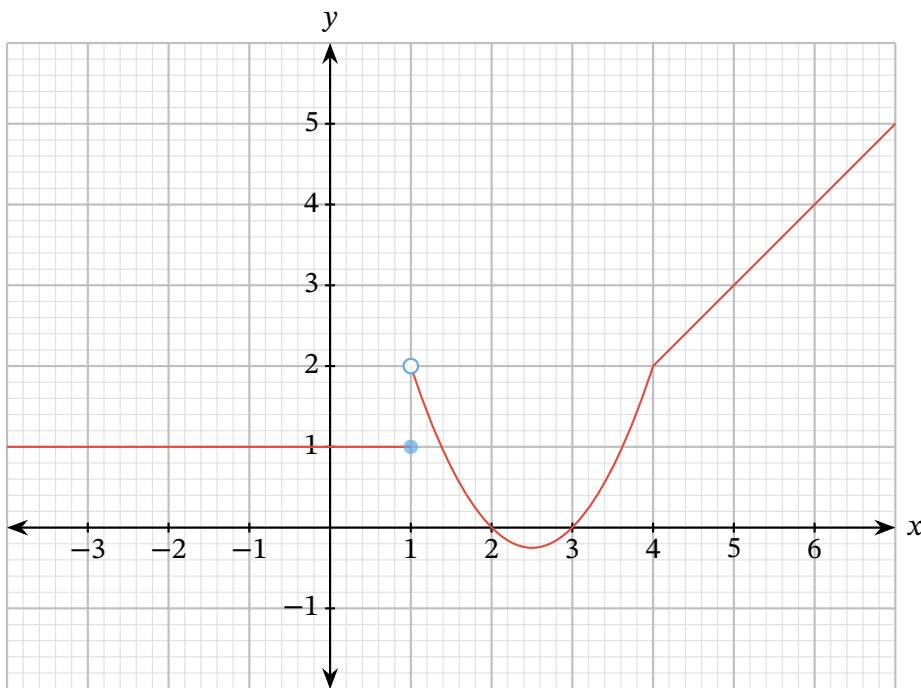
Q12:



The graph of the function f is formed of a ray with slope -3 from the point $(-1, 2)$, a line segment between the points $(-1, 2)$ and $(2, 1)$, and a ray with slope 7 from the point $(2, 1)$. Write the function in the form $f(x) = a + bx + c|x + 1| + d|x - 2|$, where a , b , c , and d are numbers that you should find.

Q13:

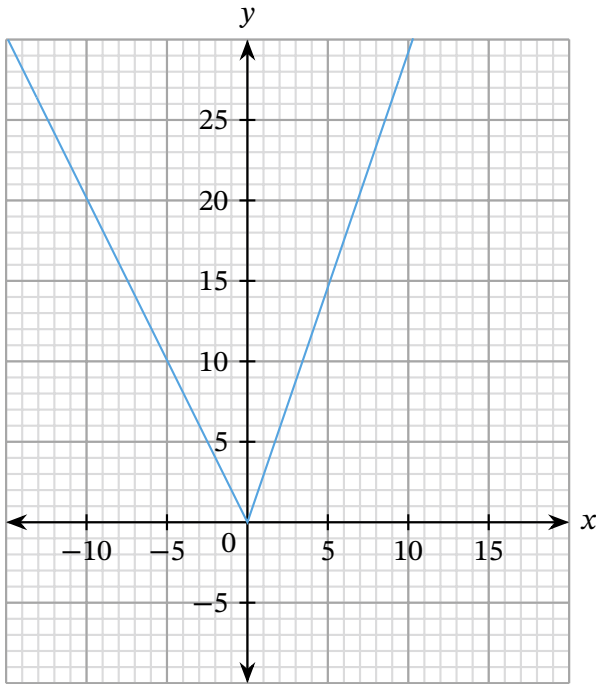
Give the piecewise definition of the function g whose graph is shown.



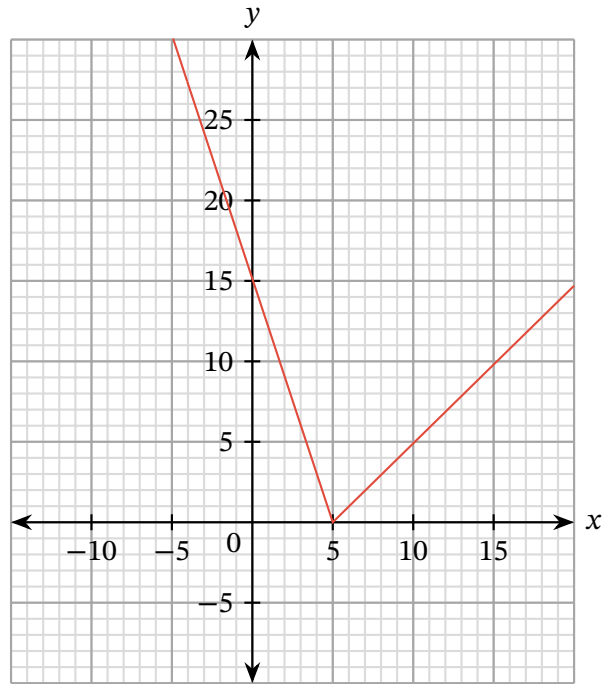
Q14:

The graph in figure (i) is of $f(x) = \frac{5}{2}|x| + \frac{1}{2}x$, which could also be written as follows

$$f(x) = \begin{cases} 3x, & x \geq 0 \\ -2x, & x < 0. \end{cases}$$



(i)

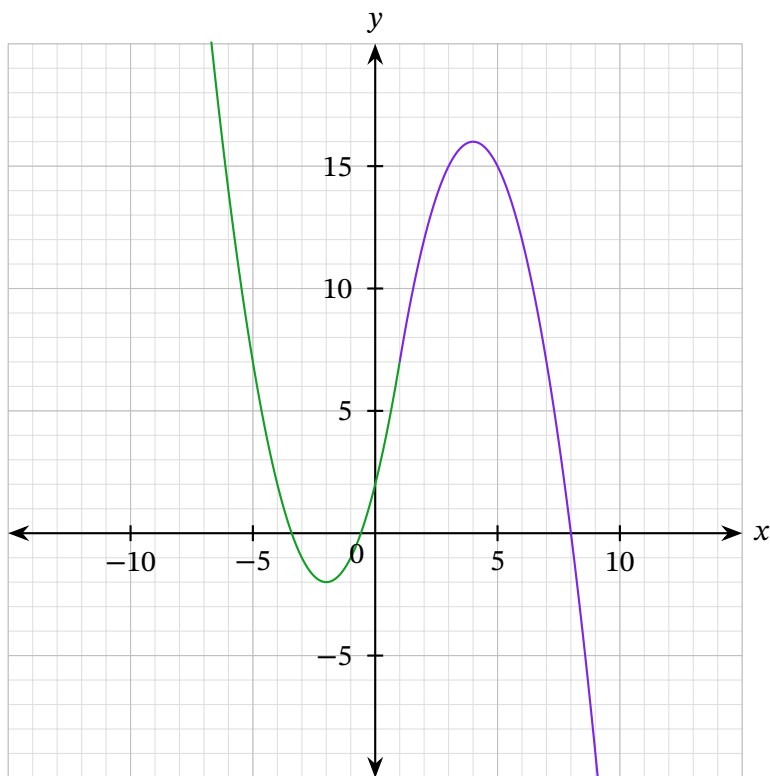


(ii)

Find the values of a and b that would make graph (ii) that of $g(x) = a|x - 5| + b(x - 5)$.

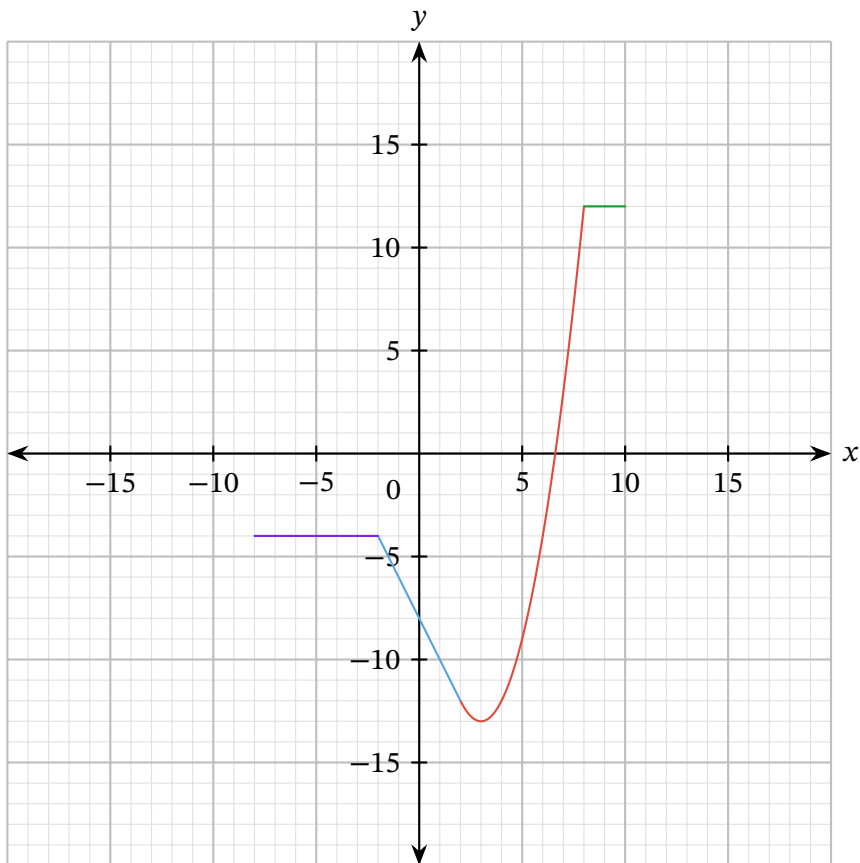
Q15:

Write an equation for each part of the domains $x \leq 1$ and $x > 1$ of the piecewise-defined function shown in the graph.

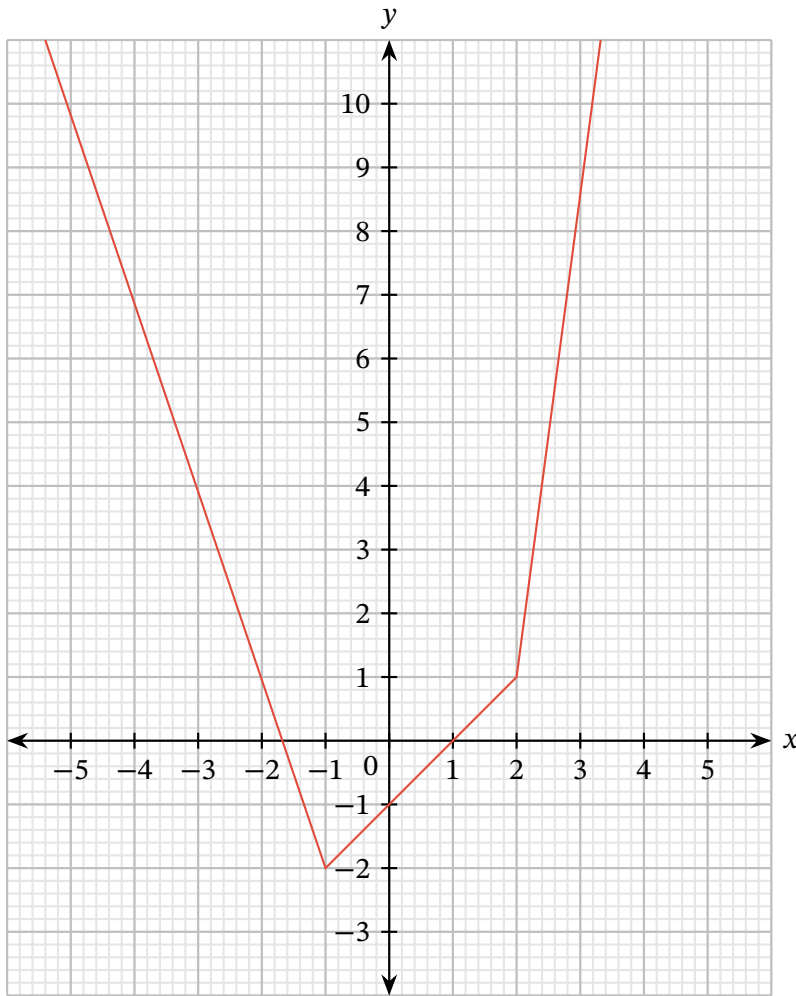


Q16:

Write an equation for each part of the domains $-8 \leq x \leq -2$, $-2 < x < 2$, $2 \leq x < 8$, and $8 \leq x \leq 10$ of the piecewise-defined function shown in the graph.



Q17:



Which of the following is the function whose graph is shown?

A $f(x) = \begin{cases} 7x - 3, & x \leq -1 \\ x + 1, & -1 < x \leq 2 \\ 7x - 13, & 2 < x \end{cases}$

B $f(x) = \begin{cases} 3x - 7, & x \leq -1 \\ x - 1, & -1 < x \leq 2 \\ 7x - 13, & 2 < x \end{cases}$

C $f(x) = \begin{cases} 3x - 7, & x \leq -1 \\ x + 1, & -1 < x \leq 2 \\ 7x - 13, & 2 < x \end{cases}$

D $f(x) = \begin{cases} 3x - 7, & x \leq -1 \\ x - 1, & -1 < x \leq 1 \\ 7x - 13, & 1 < x \end{cases}$

13E $f(x) = \begin{cases} 7x - 3, & x \leq -1 \\ x - 1, & -1 < x \leq 2 \\ 7x - 13, & 2 < x \end{cases}$