

## Piecewise Function Worksheet

### A. Evaluate the Function

Given

$$f(x) = \begin{cases} 2x + 3, & x < 0 \\ x^2 - 1, & 0 \leq x < 3 \\ 5, & x \geq 3 \end{cases}$$

Find:

1.  $f(-4)$
2.  $f(-1)$
3.  $f(0)$
4.  $f(2)$
5.  $f(3)$
6.  $f(7)$

### B. Identify the Correct Rule

Given

$$g(x) = \begin{cases} -x + 4, & x \leq 2 \\ 2x - 1, & x > 2 \end{cases}$$

Find:

7.  $g(0)$
8.  $g(2)$
9.  $g(5)$
10. Which rule is used when  $x = 2$ ?
11. Which rule is used when  $x = 2.1$ ?

### C. Write the Piecewise Function

12. Write a piecewise function for:

$$h(x) = \begin{cases} x + 2 & \text{when } x < 1 \\ 3x & \text{when } x \geq 1 \end{cases}$$

13. A taxi charges \$5 for the first 2 km and \$2 for every kilometer beyond 2 km. Write a piecewise function for the cost  $C(x)$ , where  $x$  is the distance traveled.

14. Write a piecewise function whose graph is:

- $y = 2x + 1$  for  $x < 3$
- $y = 7$  for  $x \geq 3$

### D. Graphing

Graph the following piecewise function:

$$p(x) = \begin{cases} x + 2, & x < 0 \\ 4, & 0 \leq x \leq 2 \\ -x + 6, & x > 2 \end{cases}$$



$$y = x + 2 \quad x < 0, y = 4 \quad 0 \leq x \leq 2, y = -x + 6 \quad x > 2$$

