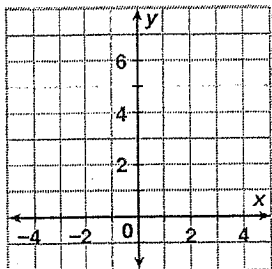


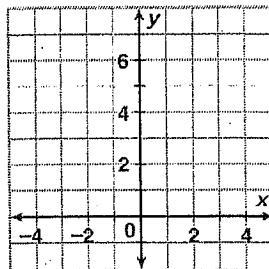
9-2 Piecewise Functions

Graph each function.

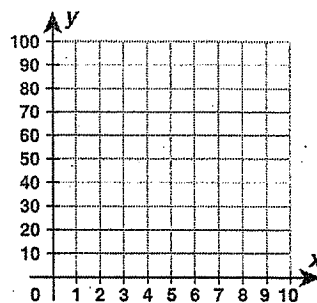
$$3. f(x) = \begin{cases} 4 & \text{if } x < 0 \\ 2x + 1 & \text{if } x \geq 0 \end{cases}$$



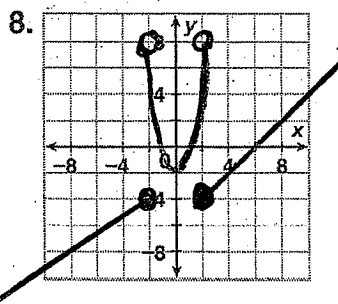
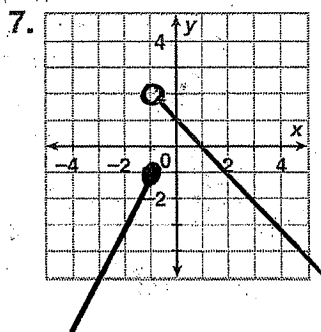
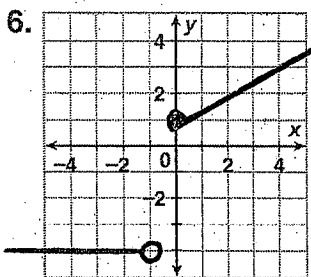
$$4. f(x) = \begin{cases} 4 - x & \text{if } x < 2 \\ 1 + 2x & \text{if } x \geq 2 \end{cases}$$



5. The cost of renting cross-country skis is \$45 for the first 4 hours and \$5 for each each additional hour. Sketch a graph of the cost of renting cross-country skis for 0 to 8 hours. Then write the piecewise function for the graph.



Write a piecewise function for each graph.



9-4 Operations with Functions

Given $f(x) = \frac{4}{x-1}$, $g(x) = x + 7$, and $h(x) = x^2 + 4x - 21$, find each function or value.

13. $(f - g)(5)$

14. $(g + h)(x)$

15. $\left(\frac{g}{h}\right)(5)$

16. $\left(\frac{h}{g}\right)(x)$

17. $(gh)(3)$

18. $(gf)(x)$

19. $g(f(-3))$

20. $h(g(x))$

21. Find $(g \circ f)$. State the domain of the composite function.

22. The local clothing store is having a 30% off sale. Preferred customers receive a coupon worth an additional 10% off. Write a composite function for the price a preferred customer pays for an item with an original price of p dollars.

9-6 Modeling Real-World Data

29. Use finite differences or ratios to determine which parent function would best model this set of data.

x	0	1	2	3	4
y	1	0	1	4	9

30. The table shows the mass g in grams of a radioactive substance remaining in a container t days after the beginning of the experiment. Find a model for the amount of radioactive substance remaining.

Time (days)	0	1	2	3	4	5	6
Mass (g)	2000	1834.08	1683.24	1544.2	1416.67	1299.67	1192.28