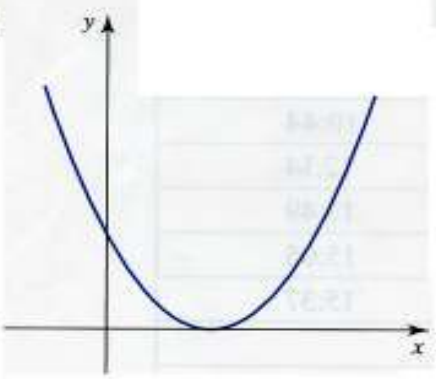
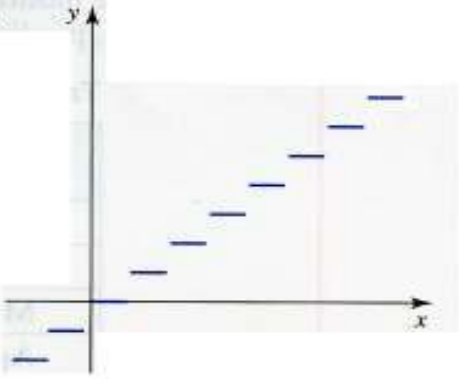
In Exercises 1–8, determine if the given function appears to be periodic in nature.

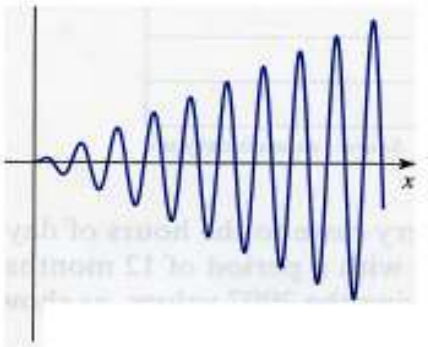
1.



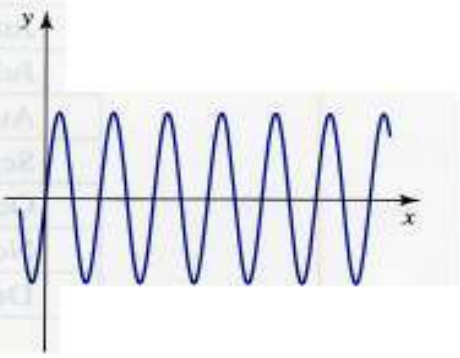
3.



2.



4.



In Exercises 17–20, assume the functions are periodic and that one period is shown. Using the concept of periodicity, complete one more cycle before and after the values given in each graph and table.

19.

x	y
0	
1	
2	
3	
4	10
5	14
6	2
7	8
8	
9	
10	
11	

35. Alternating Current The electricity used in American households is in the form of alternating current (AC). Alternating current is typically 120 volts and 60 hertz in the United States. This means that the voltage cycles from −120 volts to +120 volts and back to −120 volts and 60 cycles occur each second. In answering the following questions, assume that at $t = 0$ there is no voltage at a given outlet.

a. Sketch $v(t)$, the voltage as a function of time, for the first 0.1 second.

b. State the period, the amplitude, and the midline of the graph you made in part (a). Explain the real-world meaning of each.

5.

x	y
0	2
1	10
2	14
3	2
4	10
5	14
6	2
7	10
8	14
9	2
10	10

6.

x	y
−5	9
−4	15
−3	13
−2	12
−1	6
0	7
1	98
2	1
3	−9
4	6
5	4

7.

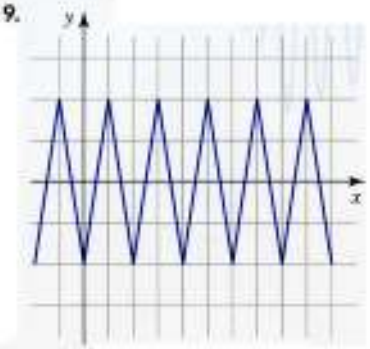
x	y
−1	7
0	8
1	9
2	8
3	7
4	8
5	9
6	8
7	7
8	8
9	9

8.

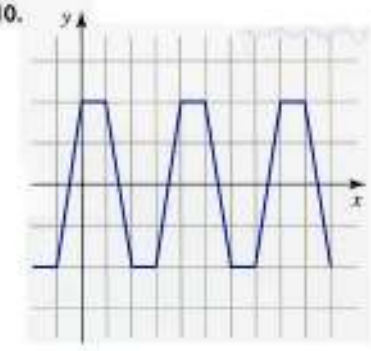
x	y
60	a
70	b
80	c
90	f
100	r
110	f
120	c
130	b
140	a
150	b
160	c

In Exercises 9–16, estimate the period of each function. (Note: Assume each horizontal line of the grid on the graphs is one unit.)

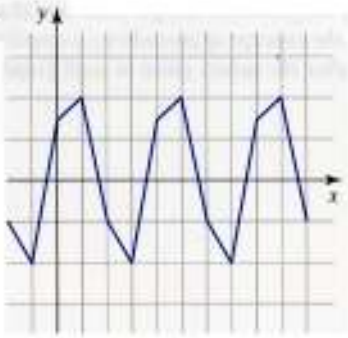
9.



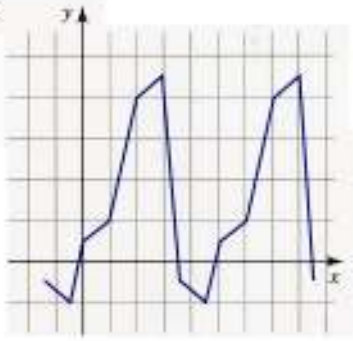
10.



11.



12.



13.

x	y
0	2
1	10
2	14
3	2
4	10
5	14
6	2
7	10

14.

x	y
12	3
24	6
36	9
48	8
60	3
72	6
84	9
96	8

15.

x	y
−38	2
−37	1
−36	2
−35	1
−34	2
−33	1
−32	2