

Name \_\_\_\_\_

# Functions

## Take-Home Assessment

**Instructions:** Complete all problems, showing all work. All graphs should be done on *separate* graph paper, using straight edges to make the axes. All axes on graphs should be labeled and numbered. Exceeding the standard on this assessment means correct answers and good explanations in your answers.

**For problems 1-4, make a chart of values using the domain  $\{-3, -2, -1, 0, 1, 2, 3\}$ , then graph the function. Then, tell what the *range* of each function is.**

1.  $y = 5 - |x|$

2.  $f(x) = 2^{(x+2)}$

range:

range:

3.  $h(x) = 9 - x^2$

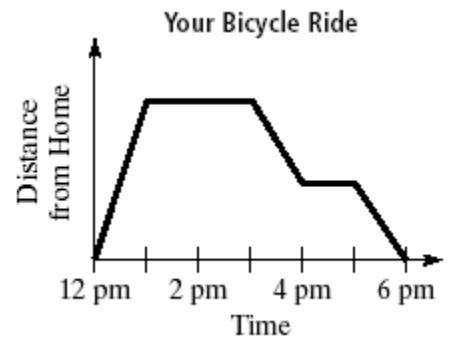
4.  $y = x^3 - 2x^2 + 2$

range:

range:

5. The graph to the right shows the relationship between time and distance from home.

- What do the flat parts of the graph represent?
- What do the sections from 3 P.M. to 4 P.M. and from 5 P.M. to 6 P.M. represent?
- What does the section from 12 P.M. to 1 P.M. represent?

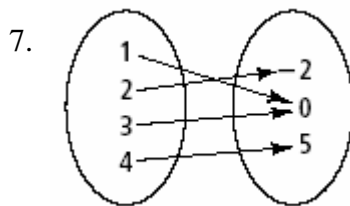


6. Your percent grade *varies directly* with the number of correct answers. You got a grade of 80 when you had 20 correct answers.

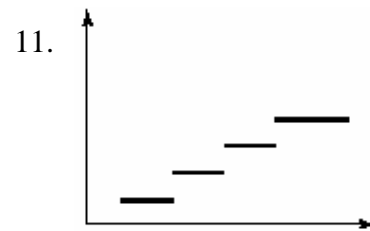
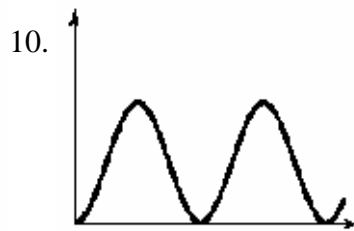
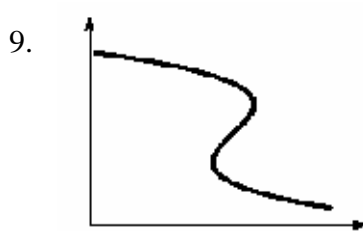
a) Write an equation for the relationship between percent grade and the number of correct answers.

b) What would your percent grade be with 24 correct answers?

For problems 7-11, tell whether the relationship is a function or not, and *explain why or why not*.



8.  $\{(-1, 2), (0, 3), (4, 3), (0, 5)\}$



**For problems 12-14, plot both points and draw in the line that connects them. Is this line a direct variation? If so, give the constant of variation. If not, why not?**

12.  $(-1, 3)$  and  $(1, -3)$

13.  $(0, 3)$  and  $(-1, 1)$

14.  $(1, -2)$  and  $(4, -8)$

**For problems 15-18, are the equations direct variations? If so, give the constant of variation.**

15.  $3x - y = 0$

16.  $x + 3y = 6$

17.  $8x + 2y = 0$

18.  $2x - 3y = 2(3x + y)$

For problems 19-20, give an equation for the function.

19.

x	f(x)
1	-2
2	1
3	6
4	13
5	22

20.

x	g(x)
1	10
2	13
3	16
4	19
5	22