

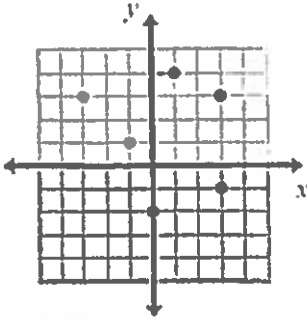
Name: KEY

Date: _____

Decide whether the graph is a function or relation. If it is a function, give the domain and range.

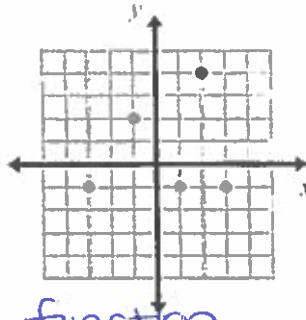
VERTICAL LINE TEST

1.



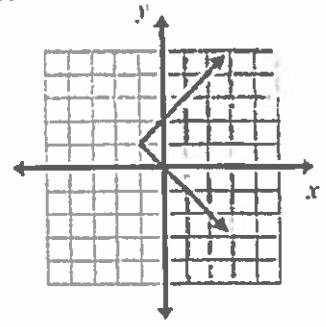
relation

2.



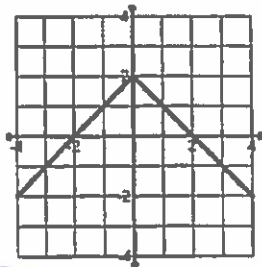
function
D: $\{-3, -1, 1, 2, 3\}$
R: $\{-1, 2, 4\}$

3.



relation

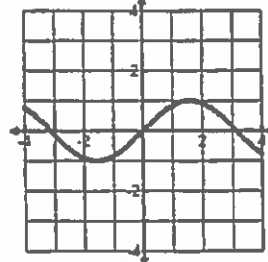
4.



function

D: \mathbb{R} R: $y \leq 2$

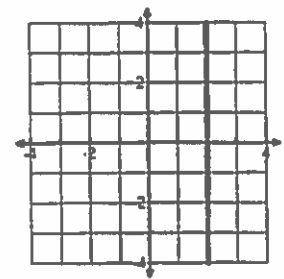
5.



Function

D: \mathbb{R} R: $-2 \leq y \leq 2$

6.



relation

Decide whether the relation is a function. If it is a function, give the domain and the range.

7.

Input	Output
1	7
1	-7
2	8
2	-8

relation

8.

Input	Output
3	2
5	4
7	6

function

D: $\{3, 5, 7\}$ R: $\{2, 4, 6\}$

9.

Input	Output
0	-6
2	-4
4	-2
6	0

function

D: $\{0, 2, 4, 6\}$
R: $\{-6, -4, -2, 0\}$

Evaluate the function when $x = 3$, $x = 0$, and $x = -2$. (3 answers for each problem)

10. $f(x) = 2x - 5$

$f(3) = 1$

$f(0) = -5$

$f(-2) = -9$

11. $h(x) = 6x + 2$

$h(3) = 20$

$h(0) = 2$

$h(-2) = -10$

12. $g(x) = 2.4x$

$g(3) = 7.2$

$g(0) = 0$

$g(-2) = -4.8$

50

If $f(x) = 2x - 3$, $g(x) = \sqrt{x+5}$, and $h(x) = x^2 - 3x + 5$, find each of the following:

$$16. f(4) = 2(4) - 3 = 5$$

$$17. h(-3) = (-3)^2 - 3(-3) + 5 = 23$$

$$18. g(7) = \sqrt{7+5} = \sqrt{12} = 3.46$$

Extension: $h(g(4)) =$

Combining Functions

Given the functions $f(x) = 5x^2 + 3$ and $g(x) = 2x^2$

$$19. \text{ Find } g(x) \cdot f(x) \quad (5x^2 + 3) 2x^2 \\ 10x^4 + 6x^2$$

Given the functions $f(x) = 6x + 8$ and $g(x) = 5x - 12$

20. Find $f(x) + g(x)$.

$$\underline{6x+8} + \underline{5x-12} \\ 11x - 4$$

21. Find $f(x) - g(x)$.

$$\underline{6x+8} - (\underline{5x-12}) \\ \underline{6x+8} - \underline{5x} + \underline{12} \\ x + 20$$

Given the functions $f(x) = 3x^2 + 5x - 8$ and $g(x) = 2x^2 + 4x - 9$

22. Find $f(x) + g(x)$.

$$\underline{3x^2+5x-8} + \underline{2x^2+4x-9} \\ 5x^2 + 9x - 17$$

23. Find $f(x) - g(x)$.

$$\underline{3x^2+5x-8} - (\underline{2x^2+4x-9}) \\ \underline{3x^2+5x-8} - \underline{2x^2} - \underline{4x} + \underline{9} \\ x^2 + x + 1$$

Given the functions $f(x) = 4x - 5$ and $g(x) = 3^x$

24. Find $f(x) + g(x)$.

$$4x - 5 + 3^x$$

25. Find $f(x) / g(x)$.

$$\frac{4x - 5}{3^x}$$