Determine whether the relation is a function.

    1) {(1, 4), (3, −1), (6, 5), (7, 8), (12, 9)}

    2) {(−4, 5), (−2, 9), (4, 8), (4, −2)}

    3) {(−6, 4), (−6, −7), (1, 1), (6, 7), (9, −9)}

    4) {(1, −5), (1, −6), (5, 1), (9, −5), (11, −6)}

    5) {(−8, −4), (−8, −9), (−1, −1), (6, −5), (7, 8)}

6) {(−6, 3), (−5, −8), (1, 8), (2, −5)}

7) {(−4, 5), (−3, −7), (2, 7), (2, −7)}

8) {(−6, −5), (−3, 9), (2, 2), (7, −2)}

9) {(−3, −8), (3, −7), (5, −6), (9, −3), (10, 4)}

10) {(−3, 3), (2, 8), (5, 9), (8, −2), (10, 6)}

11) {(−6, 5), (−3, 5), (4, 1), (5, −4)}

Give the domain and range of the relation.

12) {(–5, 5), (2, 2), (7, –1), (7, –9)}

13) {(–7, –2), (–9, –8), (4, –4), (4, –7)}

14) {(–2, 8), (–3, 3), (3, –9), (1, 7)}

15) {(9, –4), (9, –1), (5, –9), (–1, 6), (–11, 7)}
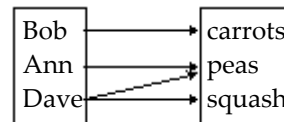
16) {(–3, 4), (–3, –5), (–8, 7), (–1, 9), (7, 5)}

17) {(5, –3), (–4, –2), (–4, 0), (0, 2), (12, 4)}

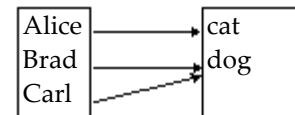**Determine the domain and range of the relation. State whether the relation is a function or not a function.**
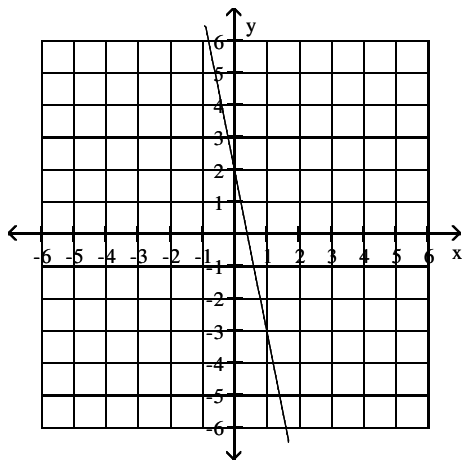
18)

5	→	25
10	→	50
15	→	75
20	→	100

19)

20)

21)

x	2	4	2	8
y	7	5	9	2

22)

x	−8	−2	2	8
y	9	4	9	4

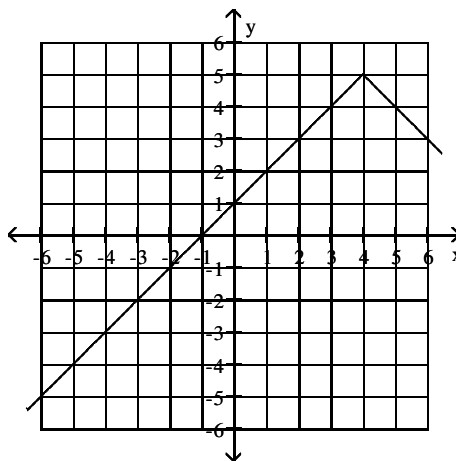**Use the graph to determine the function's domain and range.**

23)
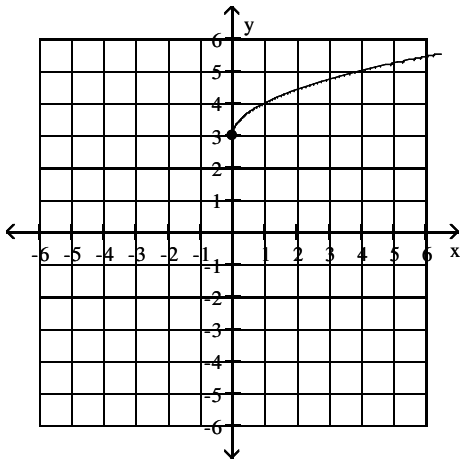

24)
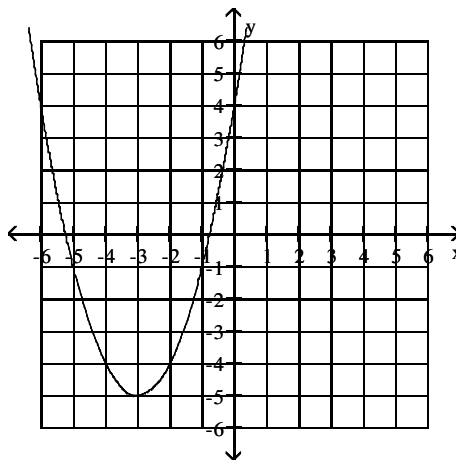
25)

26)

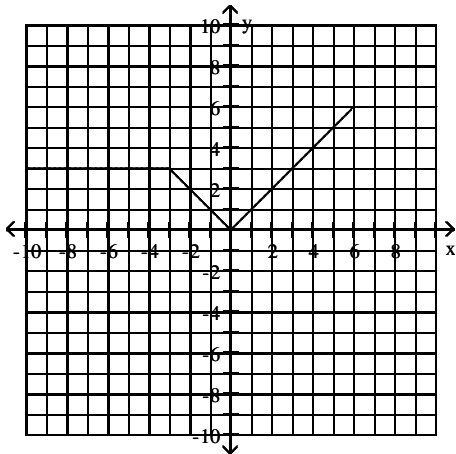**Determine whether the equation defines y as a function of x.**

28) x + y = 1

29) 7x + 7y = 10

30) $x^2 + y = 16$

27)

31) $x + y^2 = 64$

32) $x^2 + y^2 = 64$

33) $y^2 = 6x$

34) $x = y^2$

40) $|x| - y = 4$

35) $y = x^3$

36) $y = -\sqrt{x-1}$

37) $y = \sqrt{3x-8}$

38) $x + y^3 = 27$

39) $xy + 4y = 1$

1) Function
2) Not a function
3) Not a function
4) Not a function
5) Not a function
6) Function
7) Not a function
8) Function
9) Function
10) Function
11) Function
12) domain = {7, 2, –5}; range = {–1, 2, 5, –9}
13) domain = {–7, 4, –9}; range = {–2, –4, –8, –7}
14) domain = {3, –2, –3, 1}; range = {–9, 8, 3, 7}
15) domain = {5, 9, –11, –1}; range = {–9, –1, 7, 6, –4}
16) domain = {7, –8, –3, –1}; range = {5, 7, –5, 9, 4}
17) domain: {5, 0, –4, 12}; range: {–3, –2, 0, 2, 4}
18) domain: {5, 10, 15, 20}
    range: {25, 50, 75, 100}
    function
19) domain: {Bob, Ann, Dave}
    range: {carrots, peas, squash}
    not a function
20) domain: {Alice, Brad, Carl}
    range: {cat, dog}
    function
21) domain: {2, 8, 4}
    range: {9, 2, 5, 7}
    not a function
22) domain: {–8,–2, 2, 8}
    range: { 9, 4}
    function
23) domain: $(-\infty, \infty)$ All Real #'s
    range: $(-\infty, \infty)$ All Real, #'s
24) domain: $(-\infty, \infty)$ All Real #'s
    range: $[-5, \infty)$ $y \geq -5$
25) domain: $(-\infty, \infty)$ All Real #'s
    range: $(-\infty, 5]$ $y \leq 5$
26) domain: $[0, \infty)$ $x \geq 0$
    range: $[3, \infty)$ $y \geq 3$
27) domain: $(-\infty, \infty)$ All Real #'s
    range: $[0, 6]$ $0 \leq x \leq 6$
28) y is a function of x
29) y is a function of x
30) y is a function of x
31) y is not a function of x
32) y is not a function of x
33) y is not a function of x
34) y is not a function of x
35) y is a function of x

36) y is a function of x
37) y is a function of x
38) y is a function of x
39) y is a function of x
40) y is a function of x