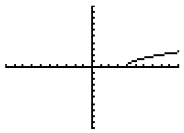


Homework Section 1.2 Day 1

Name Key
 Date _____ Hour _____

In exercises 1-4, determine whether the formula determines y as a function of x . If not explain why not.

1) $y = \sqrt{x-4}$

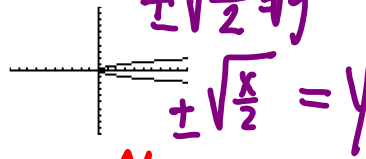


1) Yes

2) $y = x^2 \pm 3$

2) No $(2,7)$
 $(2,1)$
 Input value is not unique.

3) $x = 2y^2 \pm \sqrt{\frac{x}{2}} = \sqrt{2}$

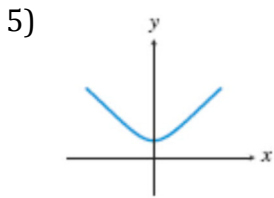


3) No
 There are 2 y values for every x value.

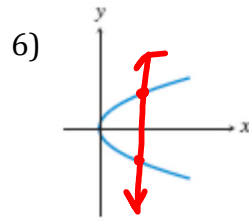
4) $x = 12 - y$

4) Yes

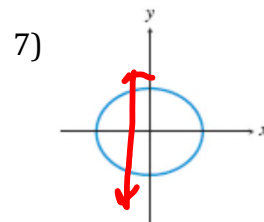
In exercises 5 - 8, use the vertical line test to determine whether the curve is the graph of a function.



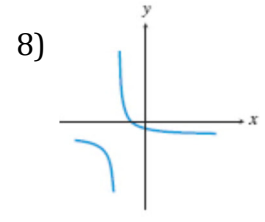
5) Yes



6) No



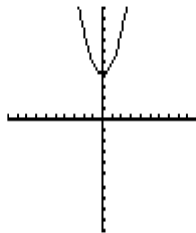
7) No



8) yes

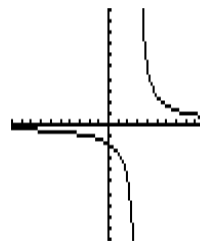
In exercises 9-15, find the **domain** (D) of the function, support your work algebraically and/or graphically, write in interval notation. **Include any vertical asymptotes** (VA) in the form of $x = \#$, if they exist.

9) $f(x) = x^2 + 4$



9) D: $(-\infty, \infty)$ VA: N/A

10) $h(x) = \frac{5}{x-3}$

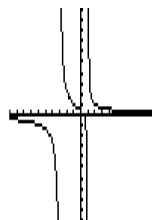


$x-3 \neq 0$
 $x \neq 3$

10) D: $(-\infty, 3) \cup (3, \infty)$ VA: $x=3$

11) $f(x) = \frac{(3x-1)}{(x+3)(x-1)}$

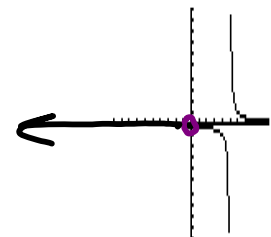
$x+3 \neq 0$ $x-1 \neq 0$
 $x \neq -3$ $x \neq 1$



11) D: $(-\infty, -3) \cup (-3, 1) \cup (1, \infty)$ VA: $x=1, x=-3$

12) $g(x) = \frac{x}{x^2-5x}$

$x(x-5)$



12) D: $(-\infty, 0) \cup (0, 5) \cup (5, \infty)$ VA: $x=5$

In exercises 9-15, find the **domain** of the function, support your work algebraically and/or graphically, write in interval notation. **Include any vertical asymptotes** in the form of $x = \#$, if they exist.

13) $h(x) = \frac{\sqrt{4-x}}{(x+1)(x^2+1)}$

$4-x \geq 0$
 $4 \geq x$
 $x \leq 4$

$x+1 \neq 0$
 $x \neq -1$
 $x^2+1 \neq 0$

13) D: $(-\infty, -1) \cup (-1, 4]$
 VA: $x = -1$

14) $f(x) = 10 - x^2$

14) D: $(-\infty, \infty)$
 VA: N/A

15) $f(x) = \frac{x^2}{1-x^2}$

$1-x^2 \neq 0$
 $\sqrt{1-x^2}$
 $\pm 1 \neq x$

15) D: $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$
 VA: $x = 1, x = -1$

In exercises 16-18, graph the function and tell whether the graph is continuous. If not, identify the x value where the discontinuity occurs and identify the type of discontinuity (removable, jump, infinite).

16) $g(x) = x^2 - 6x + 8$

16) continuous

17) $f(x) = \frac{5-x}{x-2}$

17) infinite discontinuity

18) $h(x) = \frac{x^2-4x+3}{x-3}$

$\frac{(x-3)(x-1)}{(x-3)}$

X	Y1
0	1
1	0
2	1
3	ERROR
4	1
5	1

X=0

18) removable discontinuity

In exercises 19-21, graph the function and tell whether or not it has a point of discontinuity. If there is a discontinuity, tell whether it is removable or nonremovable.

19) $g(x) = \frac{3}{x}$

X	Y1
-3	1
-2	3/2
-1	3
0	ERROR
1	3/2
2	3/2
3	1

X=-3

19) non-removable discontinuity

20) $f(x) = \frac{|x|}{x}$

X	Y2
-3	-1
-2	-1
-1	-1
0	ERROR
1	1
2	1
3	1

press + for Δ|Δ|

20) removable discontinuity

21) $h(x) = \frac{x^2-2x}{x}$

$\frac{x(x-2)}{x}$

X	Y2
-3	-5
-2	-4
-1	-3
0	ERROR
1	-1
2	0
3	1

press + for Δ|Δ|

21) removable discontinuity