

SHOW ALL WORK!

1. Indicate whether the table defines a function. Justify your answer with an explanation.

Domain	Range
-1	0
-2	1
-3	2
1	3

- A) Function
B) Not a Function

Because the x-value -2 is repeated
(-2,1), (-2,3)

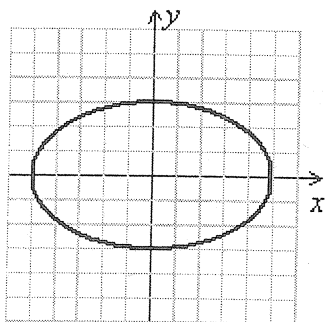
2. Indicate whether the table defines a function. Justify your answer with an explanation.

Domain	Range
1	-1
2	0
3	1
4	1

- A) Function
B) Not a Function

Because no x-values are repeated

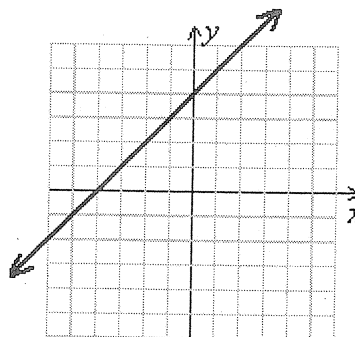
3. Indicate whether the table defines a function. Justify your answer with an explanation.



- A) Function
B) Not a Function

Because it does not pass the
vertical line test

4. Indicate whether the table defines a function. Justify your answer with an explanation.



- A) Function
B) Not a Function

Because it passes the
vertical line test

5. Indicate whether the equation defines a function with independent variable x .

$$9x - 2y = -4$$

- A) Function
B) Not a Function

6. Indicate whether the equation defines a function with independent variable x .

$$5x^2 + y = -3$$

- A) Function
B) Not a Function

7. Find the value of $f(-1)$ if $f(x) = -3x^2 + 4x$. $f(-1) = -3(-1)^2 + 4(-1)$

- A) -8 C) -6
 B) -7 D) -5

$= -3 - 4$

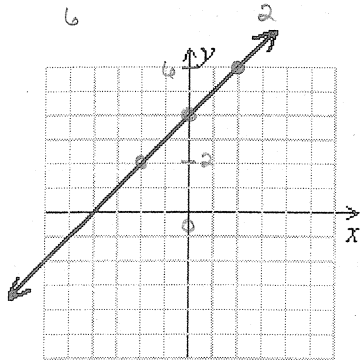
8. Find $f(a-2)$ if $f(x) = -x + 1$

- A) $-a + 3$ C) $a - 2$
 B) $-a - 1$ D) $a + 3$

$f(a-2) = -(a-2) + 1$
 $= -a + 2 + 1$
 $= -a + 3$

9. Use the graph of the function to estimate

- (a) $f(2)$ (b) $f(-2)$ (c) All x such that $f(x) = 4$



- A) (a) -2 (b) -6 (c) 8 C) (a) 6 (b) 2 (c) 8
 B) (a) -2 (b) -6 (c) 0 D) (a) 6 (b) 2 (c) 0

10. Find the domain of the function. Express your answer in interval notation

$f(x) = \sqrt{3x+5}$

- A) $(-\infty, -\frac{5}{3}) \cup (-\frac{5}{3}, \infty)$ C) $(-\frac{5}{3}, \infty)$
 B) $(-\infty, -\frac{5}{3})$ D) $[-\frac{5}{3}, \infty)$

$3x+5 \geq 0$
 $3x \geq -5$
 $x \geq -\frac{5}{3}$

11. Find and simplify $\frac{f(x+h) - f(x)}{h}$ for the function $f(x) = x^3 + 4x$

- A) $3x^2 + 3xh + 4$ C) $3x^2 + 3x + h^2 + 4$
 B) $3x^2 + 3xh + h^2 + 4$ D) $3x^2 + 3x + 4$

$\frac{(x+h)^3 + 4(x+h) - [x^3 + 4x]}{h}$
 $\frac{(x^3 + 3x^2h + 3xh^2 + h^3) + 4x + 4h - x^3 - 4x}{h}$
 $\frac{3x^2h + 3xh^2 + h^3 + 4h}{h}$

12. Find and simplify $\frac{f(x) - f(a)}{x-a}$ for the function $f(x) = x^3 + 4x$

- A) $x^2 - a^2 + 8$ C) $x^2 - ax + a^2 + 4$
 B) $x^2 - a^2 - 8$ D) $x^2 + ax + a^2 + 4$

$\frac{x^3 + 4x - (a^3 + 4a)}{x-a}$
 $\frac{x^3 - a^3 + 4x - 4a}{x-a}$
 $\frac{(x-a)(x^2 + xa + a^2) + 4(x-a)}{x-a} = x^2 + xa + a^2 + 4$