

Key

Chapter 4 Test Study Guide

1) Use the functions $f(x) = 2x$ and $g(x) = x^2 + 1$ to find the value of the expression.

$f(3) + g(-2)$

$2(3) + (-2)^2 + 1$
 $6 + 5 = 11$

2) Find the range of the function for the given domain.

$f(x) = x^3 + 1; \{-2, -1, 0, 1, 2\}$

$(-2)^3 + 1 = -7$

$(-1)^3 + 1 = 0$

$(0)^3 + 1 = 1$

$(1)^3 + 1 = 2$

$(2)^3 + 1 = 9$

$R = \{-7, 0, 1, 2, 9\}$

3) Find the range of the function for the given domain.

$f(x) = x^2 - 2; \{-4, -2, 0, 1, 3\}$

$(-4)^2 - 2 = 14$

$(-2)^2 - 2 = 2$

$(0)^2 - 2 = -2$

$(1)^2 - 2 = -1$

$(3)^2 - 2 = 7$

$R = \{-2, -1, 2, 7, 14\}$

4) A tenth grade class is selling granola bars for a fundraiser. They earn \$0.75 for every granola bar that they sell. They have ordered 300 granola bars for the sale. Write a function to determine the profit P the class earns for each bar b they sell. Find a reasonable domain and range for the function. \$0.75/bar, have 300 bars

$P = \text{profit}(\text{range}) \quad P = .75b$

$b = \text{bar}(\text{domain})$

DOMAIN: $0 \leq b \leq 300$

RANGE: $0 \leq P \leq 225$

5) If $f(x) = x^2 - 15$ and $f(a) = 49$, what is the value of a ? Explain.

$49 = a^2 - 15$
 $\sqrt{64} = \sqrt{a^2}$

$8 = a$

6) If $f(x) = -2x - 4$ and $f(m) = 10$, what is the value of m ? Explain.

$10 = -2m - 4$

$\frac{14}{-2} = \frac{-2m}{-2}$

$-7 = m$

7) List the domain and range, map the relation, and tell whether or not it is a function:

a) $\{(-2, 1), (3, 6), (2, -3), (4, 1)\}$

b) $\{(0, 6), (1, -3), (2, 4), (0, 3)\}$

D: $\{-2, 2, 3, 4\}$
 R: $\{-3, 1, 6\}$

Yes, it's a function

D: $\{0, 1, 2\}$
 R: $\{-3, 3, 4, 6\}$

No, it's not a function

8) Write a rule that represents the function.

$\{(0, 1), (1, 5), (2, 9), (3, 13), (4, 17)\}$

+4 +4 +4 +4

$y = 4x + 1$

9) Write a rule that represents the function.

$\{(0, -1), (1, 0), (2, 7), (3, 26), (4, 63)\}$

$1^3 - 1 = 0 \quad 3^3 - 1 = 26$
 $2^3 - 1 = 7 \quad 4^3 - 1 = 63$

$y = x^3 - 1$

10) Write a function rule that represents:

a) 8 less than one third of x is y

$\frac{1}{3}x - 8 = y$

b) 6 more than the sum of a number and 4 is y

$u + (n + 4) = y$

Tell whether or not each sequence is arithmetic. Justify your answer. If it is arithmetic, write a function rule to represent it.

a) 6, 12, 18, 24, 30

arithmetic

b) -2, -5, -8, -11, -14

arithmetic

c) 3, 6, 12, 24, 48

Not arithmetic

$A(n) = 10 + (n - 1)6$

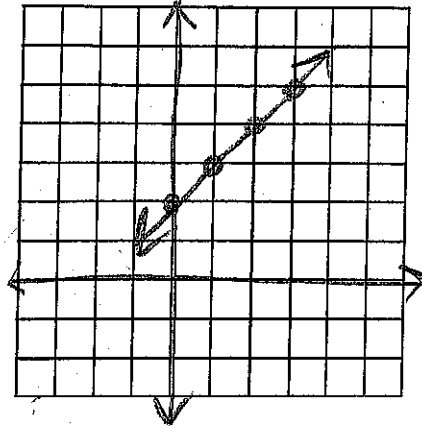
$A(n) = -2 + (n - 1)-3$

$x2 \cdot x2 \cdot x2 \cdot x2$

12) Graph each equation and determine whether the relationship is a function. If it is, write an equation for it.

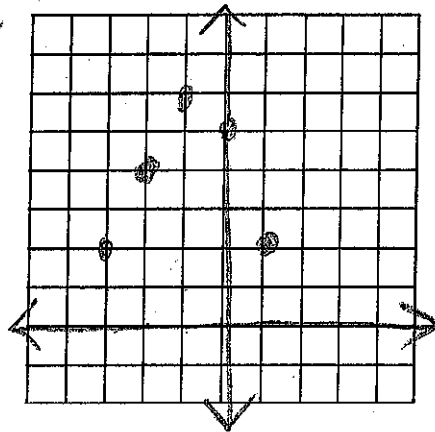
x	y
0	2
1	3
2	4
3	5

yes, it's a
function
 $y = 1x + 2$



X	Y
-3	2
-2	4
-1	6
0	5
1	2

yes, it's a
function
Nonlinear -
don't worry
about this
equation!



13) Circle the equation that best represents the function:

1) (0, 4), (1, 5), (2, 12), (3, 31), (5, 129) (Not linear)

- a) ~~$3x + 4$~~
- b) ~~$2x^2 + 3$~~
- c) $x^3 + 4$
- d) $3^x + 4$

$$1^3 = 1 + 4 = 5 \quad 5^3 = 125 + 4 = 129$$

$$2^3 = 8 + 4 = 12$$

$$3^3 = 27 + 4 = 31$$

2) (0, 0), (1, 1), (2, 3), (3, 7), (4, 15) (Not linear)

- a) ~~$2x - 1$~~
- b) ~~$x^2 - 1$~~
- c) ~~$2x^2 - 1$~~
- d) $2^x - 1$

$$2^1 = 2 - 1 = 1$$

$$2^2 = 4 - 1 = 3$$

$$2^3 = 8 - 1 = 7$$

$$2^4 = 16 - 1 = 15$$