Functions 2.

a.

- the domain

$\{a, b, c, d, e\}$

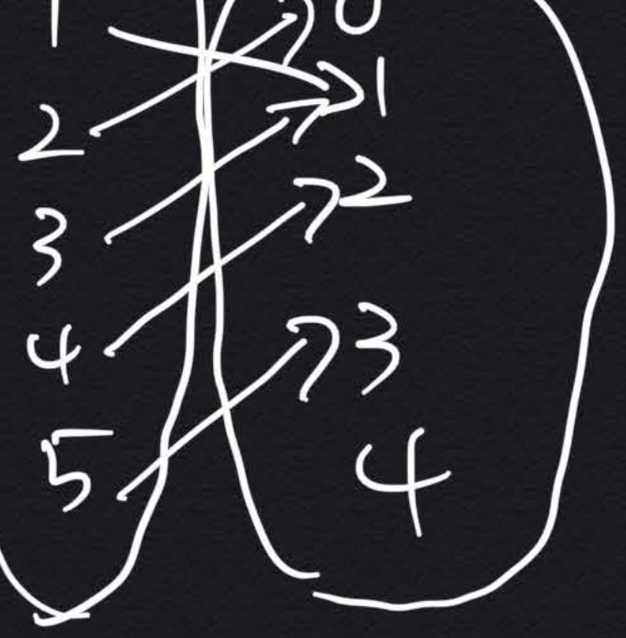
- the target

$\{w, x, y, z\}$

- the range

$\{w, y, z\}$

b.



$\text{Range} = \{x \in N, x < 6 : |x-2|\}$

$= \{0, 1, 2, 3\}$

c. If is not a function.

If the domain is negative, $f(x)$ is not real number.

d. $A \times A = \{(1,2),(2,3),(2,4),(2,5),(3,2),(3,3),(3,4),(3,5),(4,2),(4,3),(4,4),(4,5),(5,2),(5,3),(5,4),(5,5)\}$

$\Rightarrow f(2,4) = x+y = \{4,5,6,7,8,9,10\}$

e. all crayons : $5x$

in a box : 24

$$\left\lceil \frac{5x}{24} \right\rceil$$

f. If is onto function

$f(x,y) = |x| - |y|$

(5.)

If is onto function

$f(x,y) = |x| - |y|$

(9.)

- this is not onto if $f(x) = 0$, x is $\frac{4}{5}$.

(which is not integer)

- this is one to one $x_1 \neq x_2$

$f(x_1) \neq f(x_2)$

$\Rightarrow 5x_1 - 4 \neq 5x_2 - 4$

$\Rightarrow 5x_1 \neq 5x_2$

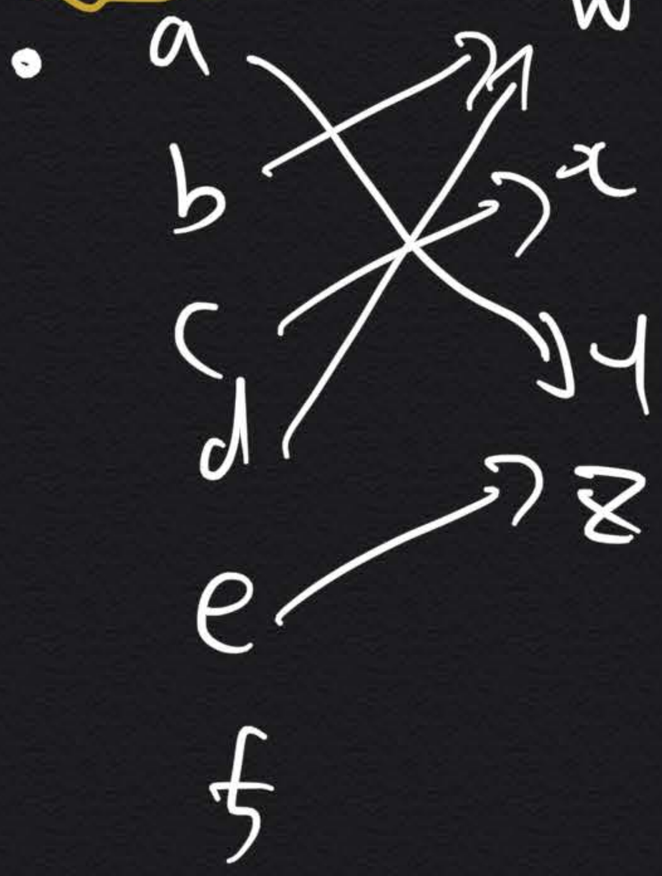
$\Rightarrow x_1 \neq x_2$

(h)

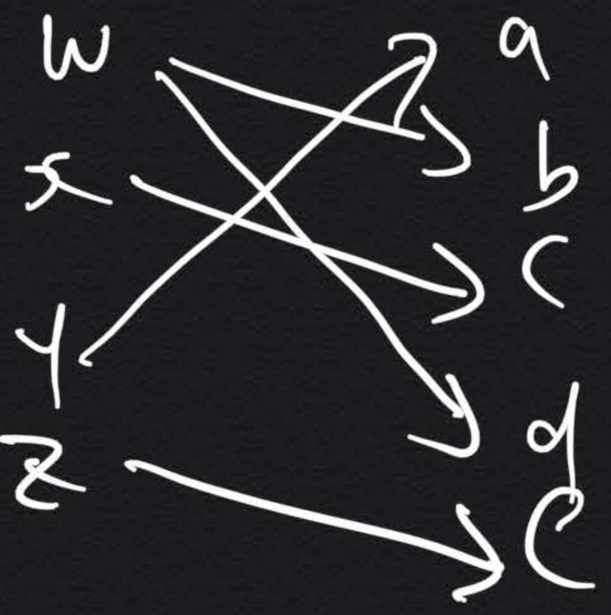
$\Rightarrow 5^{x_1} \neq 5^{x_2}$

$\Rightarrow x_1 \neq x_2$

(h)



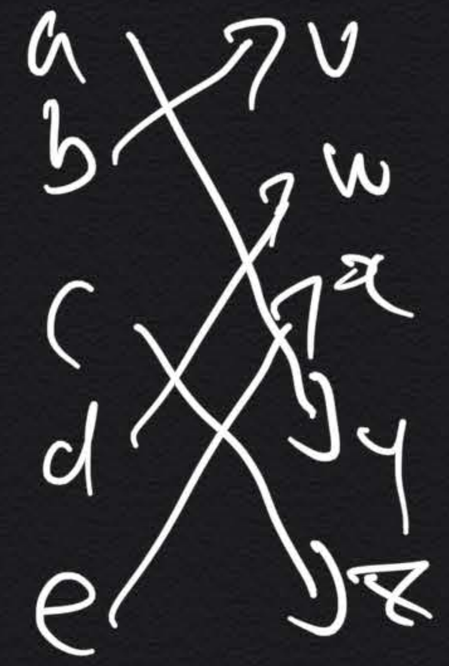
$\Rightarrow$



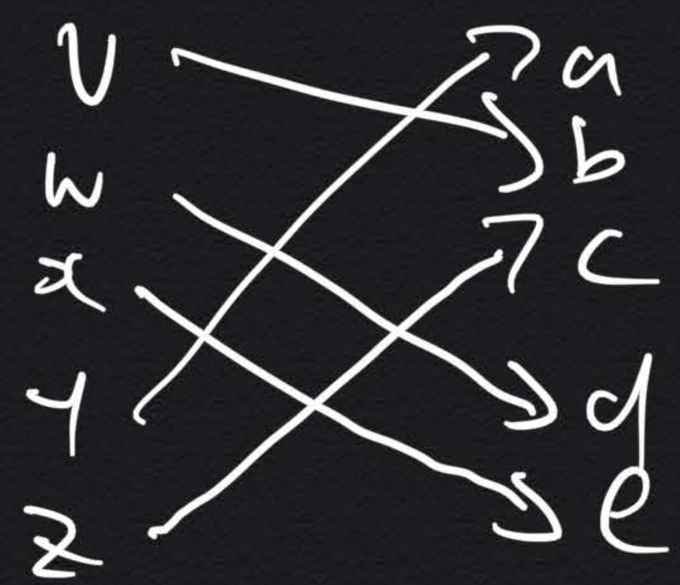
f^{-1}

This is not well-defined.

Because 'w' has two results which is more than one. (f is not one-to-one)



$\Rightarrow$



f

f^{-1}

well defined

i

- The domain = {v, w, x, y, z}
- The target = {1, 2, 3, 4, 5}
- The arrow

- the range = {1, 3, 4}