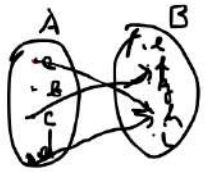
$A = \{a, b, c, d\}$ $B = \{e, f, g, h, i\}$

$R_1 \subset A \times B$
$R_2 \subset A \times B$
$R_3 \subset A \times B$

a. $R_1 = \{(a, h), (c, f), (d, h)\}$

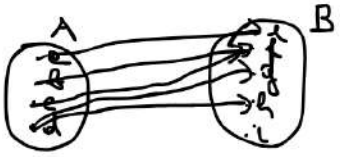
$\forall x \in A \; \exists! \, y \in B \mid y = f(x)$



NON È FUNZIONE SOLO PERCHÈ

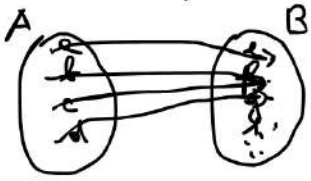
b NON È COLLEGATO A NESSUN ELEMENTO DEL CODOMINIO $\nexists f(b)$

b. $R_2 = \{(a,2); (d,g); (b,f); (c,f); (d,h)\}$



1 : 2 ✗ NON È FUNZIONE

c. $(a,e);(d,g);(b,f);(c,f)$

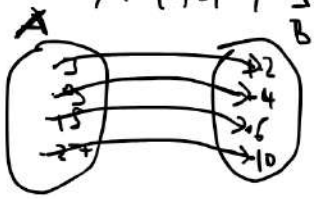


✓

FUNZIONE
NON INIETTIVA
NON SURIETTIVA

a) $f(x) = \frac{1}{3} \cdot x + 1$ $\quad A = \{3, 9, 15, 27\}$ $\quad B = \mathrm{Im} f$

f SURIETTIVA



$f(3) = \frac{1}{3} \cdot 3 + 1 = 1 + 1 = 2$

$f(9) = \frac{1}{3} \cdot 9 + 1 = 3 + 1 = 4$

$f(15) = \frac{1}{3} \cdot 15 + 1 = 5 + 1 = 6$

$f(3) = 2$

$f(9) = 4$

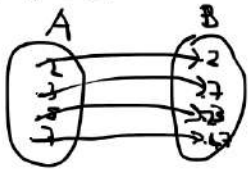
$f(15) = 6$

$f(27) = \frac{1}{3} \cdot 27 + 1 = 9 + 1 = 10$

$B = \mathrm{Im} f = \{2, 4, 6, 10\}$

f INIETTIVA E SURIETTIVA

b) $f(x) = x^2 - 2$ $\quad A = \{2, 3, 5, 7\}$ $\quad B = \text{Im} f$ — SURIETTIVA



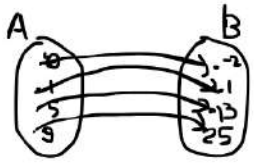
$f(2) = 2^2 - 2 = 4 - 2 = 2$
$f(3) = 3^2 - 2 = 9 - 2 = 7$
$f(5) = 5^2 - 2 = 25 - 2 = 23$
$f(7) = 7^2 - 2 = 49 - 2 = 47$

$B = \text{Im} f = \{2, 7, 23, 47\}$

INIETTIVA
SURIETTIVA

$f(x) = 3x - 2$ $\quad A = \{0, 1, 5, 9\}$ $\quad B = \text{Im } f$

f SURIETTIVA



$f(0) = 3 \cdot 0 - 2 = 0 - 2 = -2$

$f(1) = 3 \cdot 1 - 2 = 3 - 2 = 1$

$f(5) = 3 \cdot 5 - 2 = 15 - 2 = 13$

$f(9) = 3 \cdot 9 - 2 = 27 - 2 = 25$

$B = \text{Im } f = \{-2, 1, 13, 25\}$

INIETTIVA

SURIETTIVA

$A = \{10, 20, 30, 40, 60, 400\}$

$B = \{1, 2, 3, 4, 6\}$

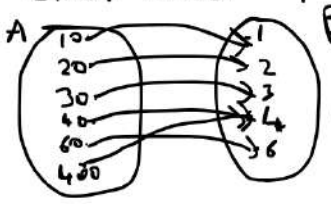
$A' = \{10, 20, 30, 40, 60\}$

$C = \{1, 2, 3, 5, 6\}$

R "X 44 LA PRIMA CIFRA UGUALE A Y"

a) $R \subset A \times B$

f SOLO SURIETTIVA

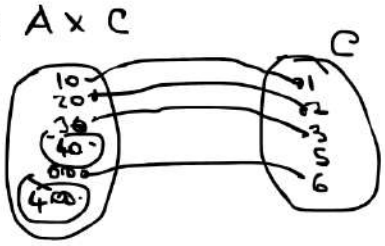


FUNZIONE NON INIETTIVA

(40, 4) ; (400, 4)

$\mathrm{Im} f = B$

b) $\mathcal{R}_2 \subset A \times C$

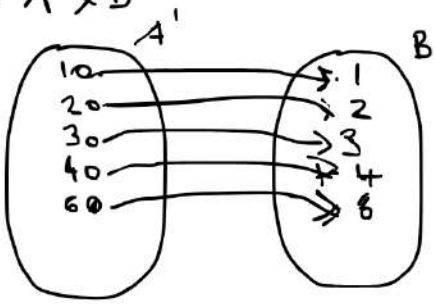


~~A~~ ~~f(10)~~ 40 e 400 NON RISULTANDO COLLEGATI

~~A~~ ~~f(400)~~

NON E' FUNZIONE!!!

c) $R_3 \subset A' \times B$



FUNZIONE
INIETTIVA
E SURIETTIVA