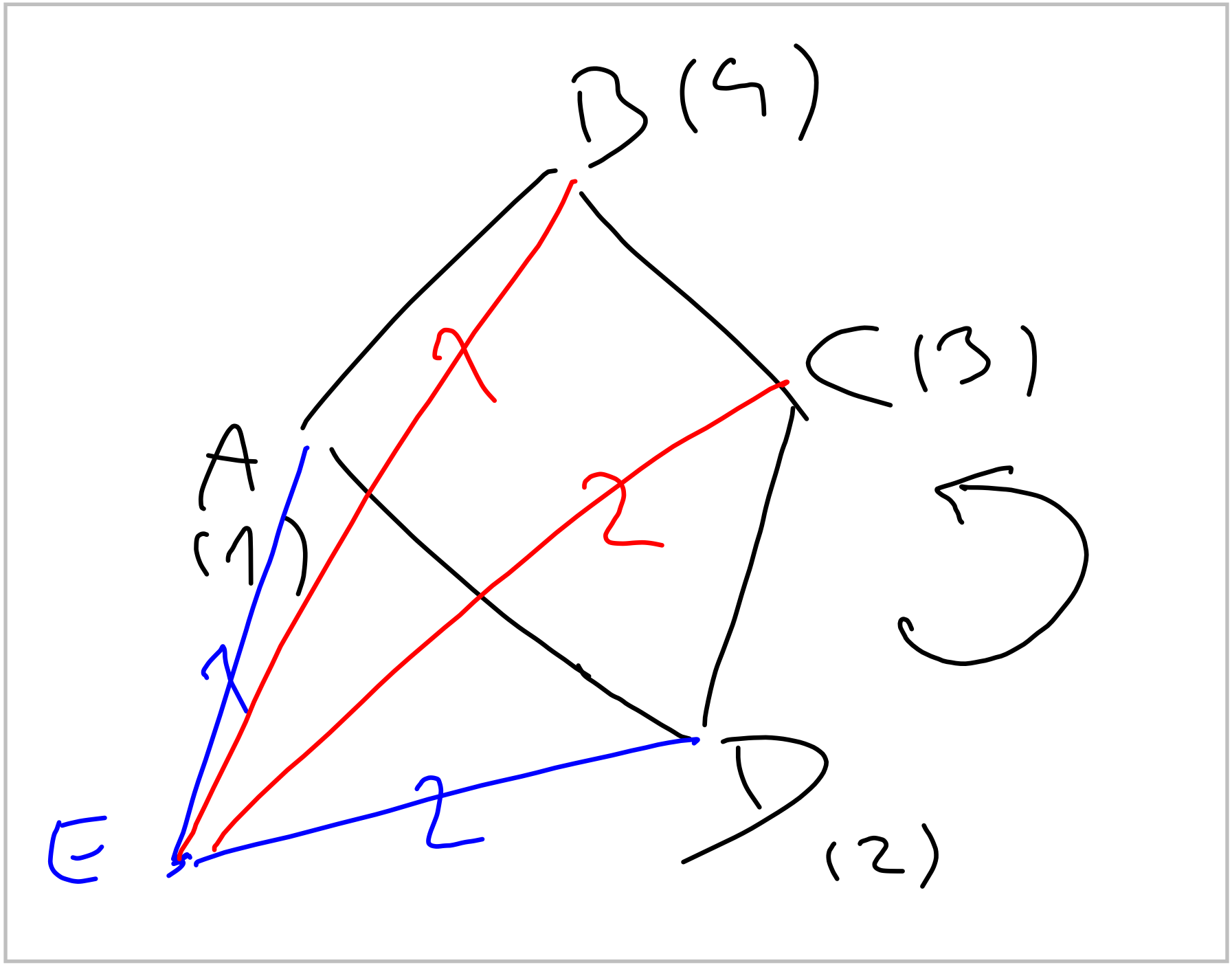
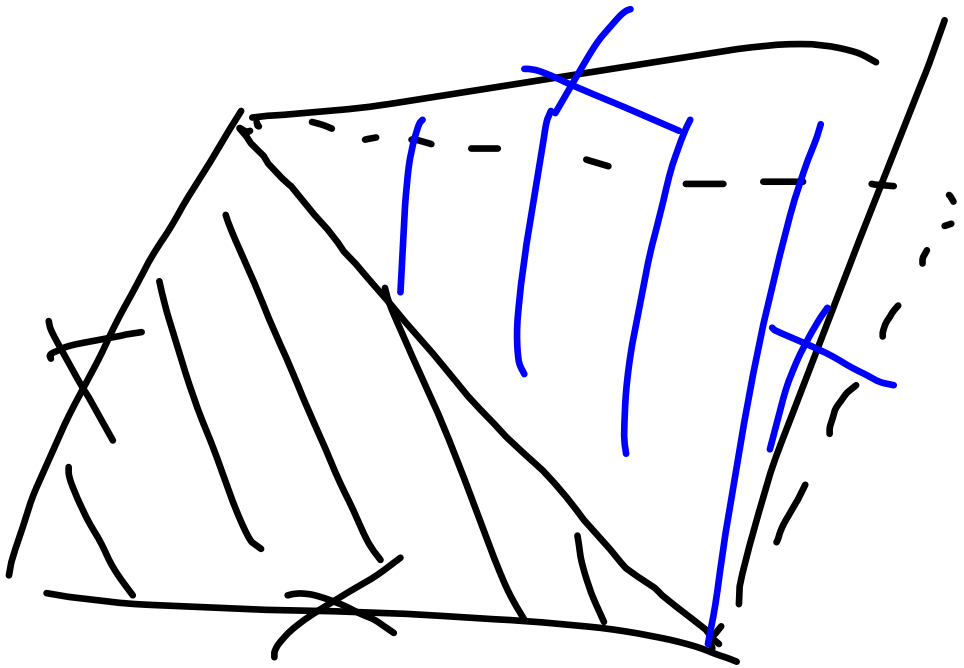

B (4)
C (3)
A
(1)
D
(2)
E
2
2
2
2



$f, g : \mathbb{R} \to \mathbb{R}$

$f \sim g \iff f(0) = g(0)$

R: $f \sim f \iff f(0) = f(0)$

S: $f \sim g \Rightarrow g \sim f$

$f(0) = g(0) \Rightarrow g(0) = f(0)$

T: $f \sim g \wedge g \sim h \Rightarrow f \sim h$

$f(0) = g(0) \wedge g(0) = h(0) \Rightarrow f(0) = h(0)$

$f, g : \mathbb{R} \longrightarrow \mathbb{R}$

$f \sim g \qquad f(0) = g(1)$

$S : f \sim g \Rightarrow g \sim f$

$f : x \longmapsto x$

$g : x \longmapsto x - 1$

$f(0) = 0 \qquad g(1) = 1 - 1 = 0$

$g(0) = -1 \neq f(1) = 1$

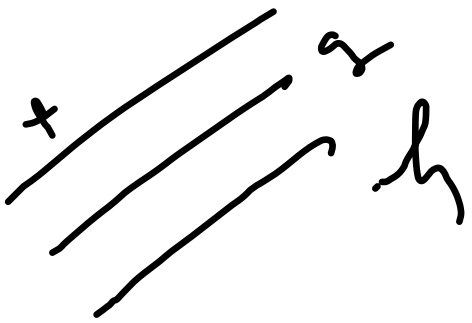
$f \sim g$

$g \not\sim f$

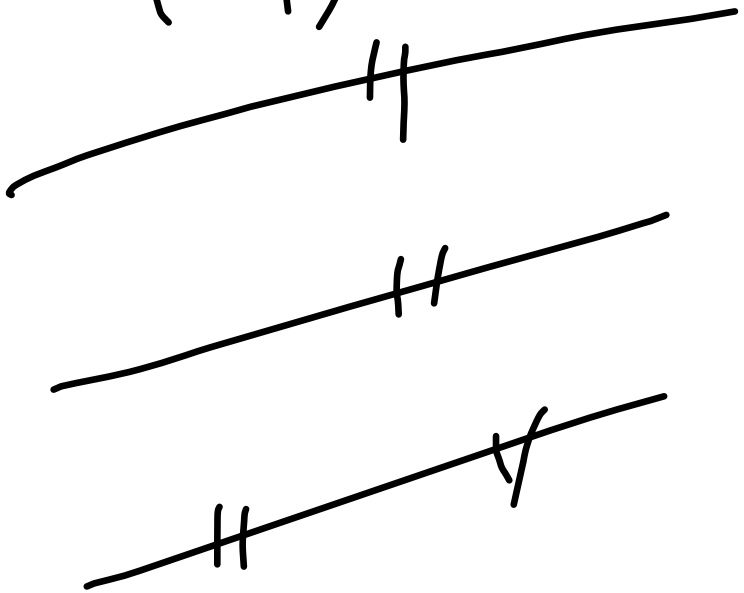
$R : f \sim f \Leftrightarrow f(0) = f(1)$

$f = \sin$

(3.)



(4)



S: ✓

T: ✓

R: ~~f~~ ~ f

S, T ✓

R ✓

$S(67) = 13$ | $b = 19$ | $a = 29$

$S(43) = 7$ | $a = 19$ | $b = 18$

$c = 91$ | $c = 92$

$S(67) + S(43) = 13 + 7 = 20$

$13 \sim 7$ [$m \sim m \Leftrightarrow S(m) + S(m)$ " 20

S: ✓

T: $a, b, c \in \mathbb{N}$

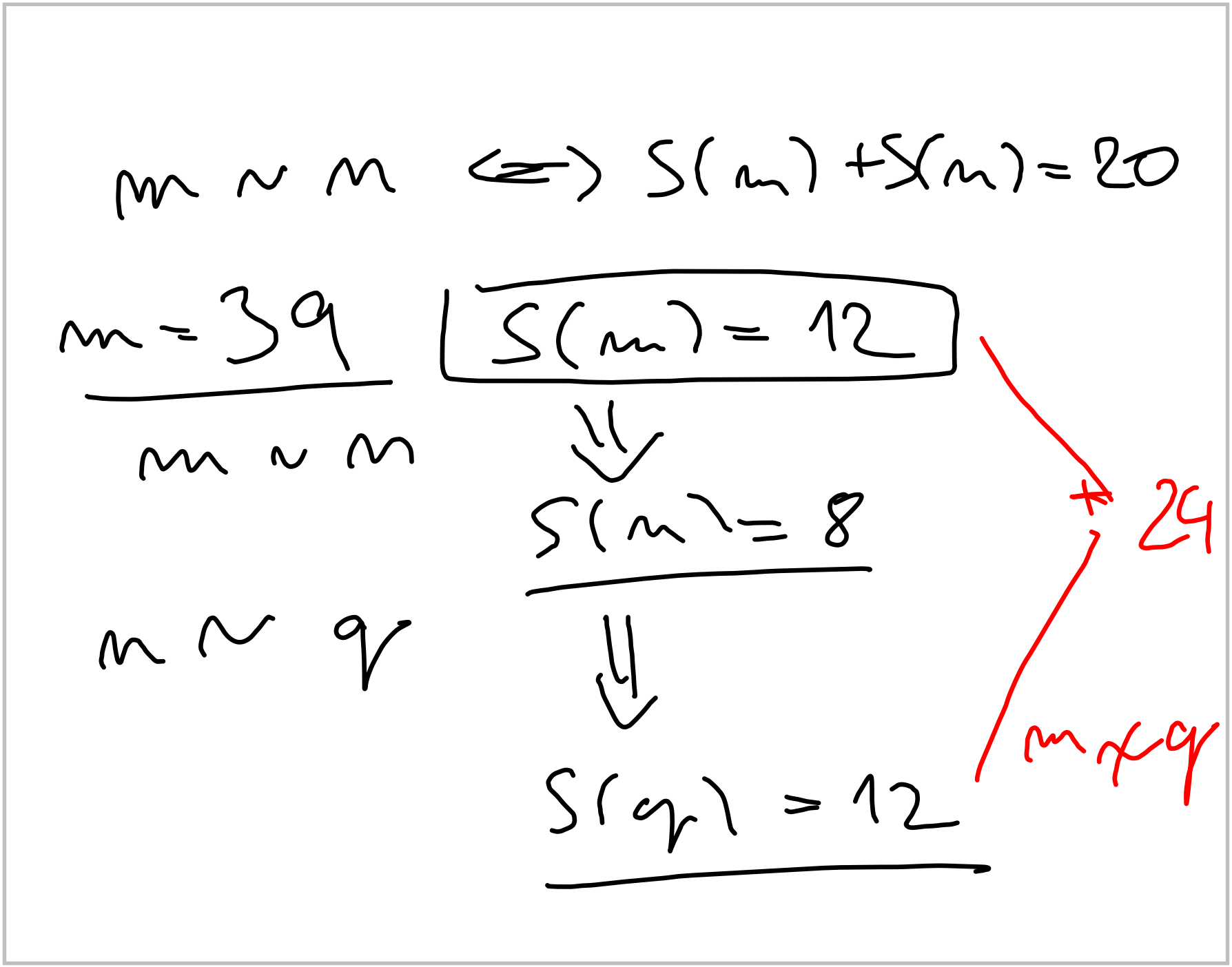
$a \sim b$, $b \sim c$ $\overset{?}{\Rightarrow}$ $a \sim c$

$\rightarrow S(a) + S(b) = 20$

$S(b) + S(c) = 20$ $\leftarrow$

$S(a) + S(c) = 20 - S(b) + 20 - S(b) = 40 - 2S(b)$

" 20


m ~ n ⇔ S(m) + S(n) = 20
m = 39
S(m) = 12
m ~ n
S(n) = 8
n ~ q
S(q) = 12
+ 24
m · q

$m \sim n \iff S(m) + S(n) = 20$

$m \sim n \wedge n \sim q \Rightarrow m \sim q$

$\hookrightarrow S(m) + S(n) = 20 \Rightarrow S(m) = 20 - S(n)$

$\hookrightarrow S(n) + S(q) = 20$

$S(q) = 20 - S(n)$

$S(m) + S(q) = 20$

$\quad\; \shortparallel$

$20 - S(n) + 20 - S(n) = 40 - 2S(n)$

$20 = 40 - 2S(n)$

$S(n) = 10$

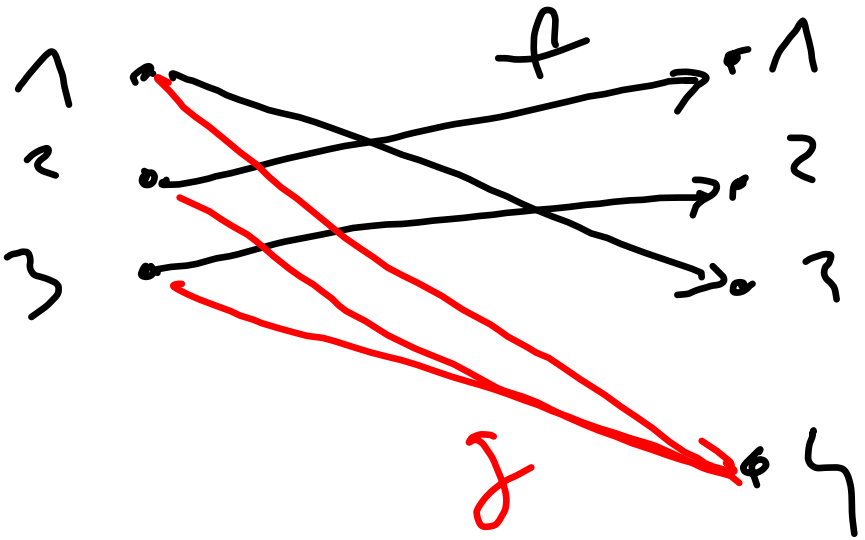
$n = 11$

$m = 99$

$q = 99$

$f: M \longrightarrow N$

$f(x) = f(y) \Rightarrow x = y$



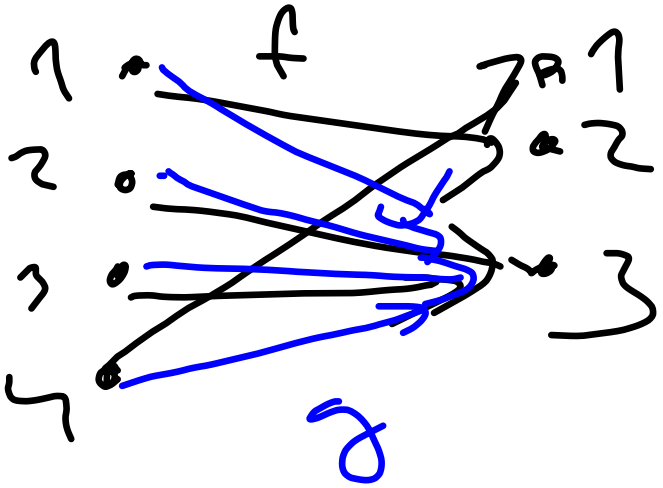
f ... ing

f ... není!

$4 \cdot 3 \cdot 2 = 4!$

$f: \mathbb{N} \to \mathbb{N}$

$\forall x \in \mathbb{N} \quad \exists y \in \mathbb{N} \quad f(y) = x$



f surj

f není 1

1 2^4 ... zobrazení kde 1 není vzor

1,2 1 ... — 1,2 není vzor 36

$3^4 - \left(3^4\right) - \left(\binom{3}{2}\left(2^4 - 2\right)\right)$

z_{ij} $\quad$ $sur + img$

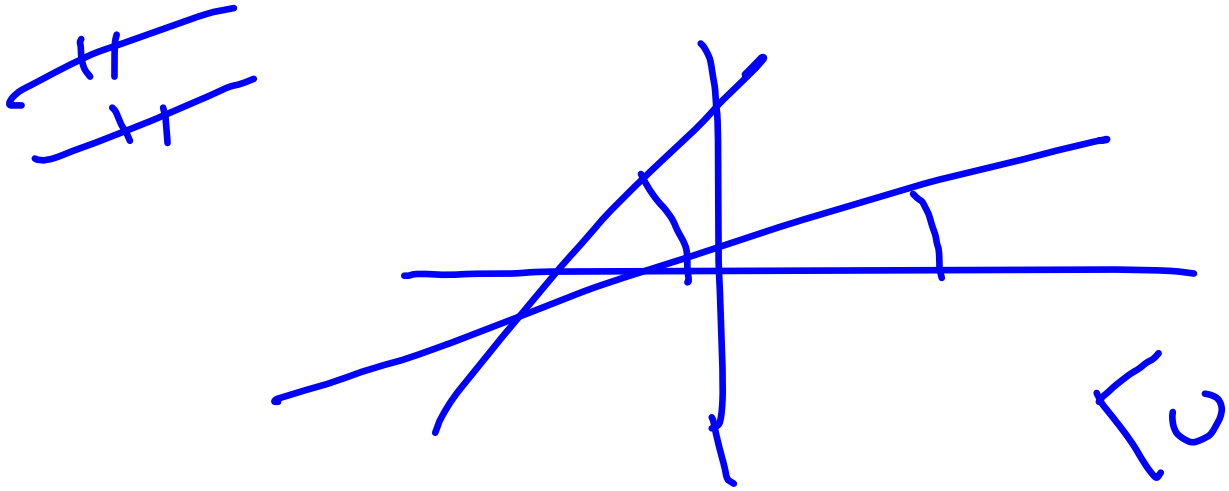
$3 \cdot 2 \cdot 1 = 6$

$E = R, S, T$ $\{1, 2, 3\}$

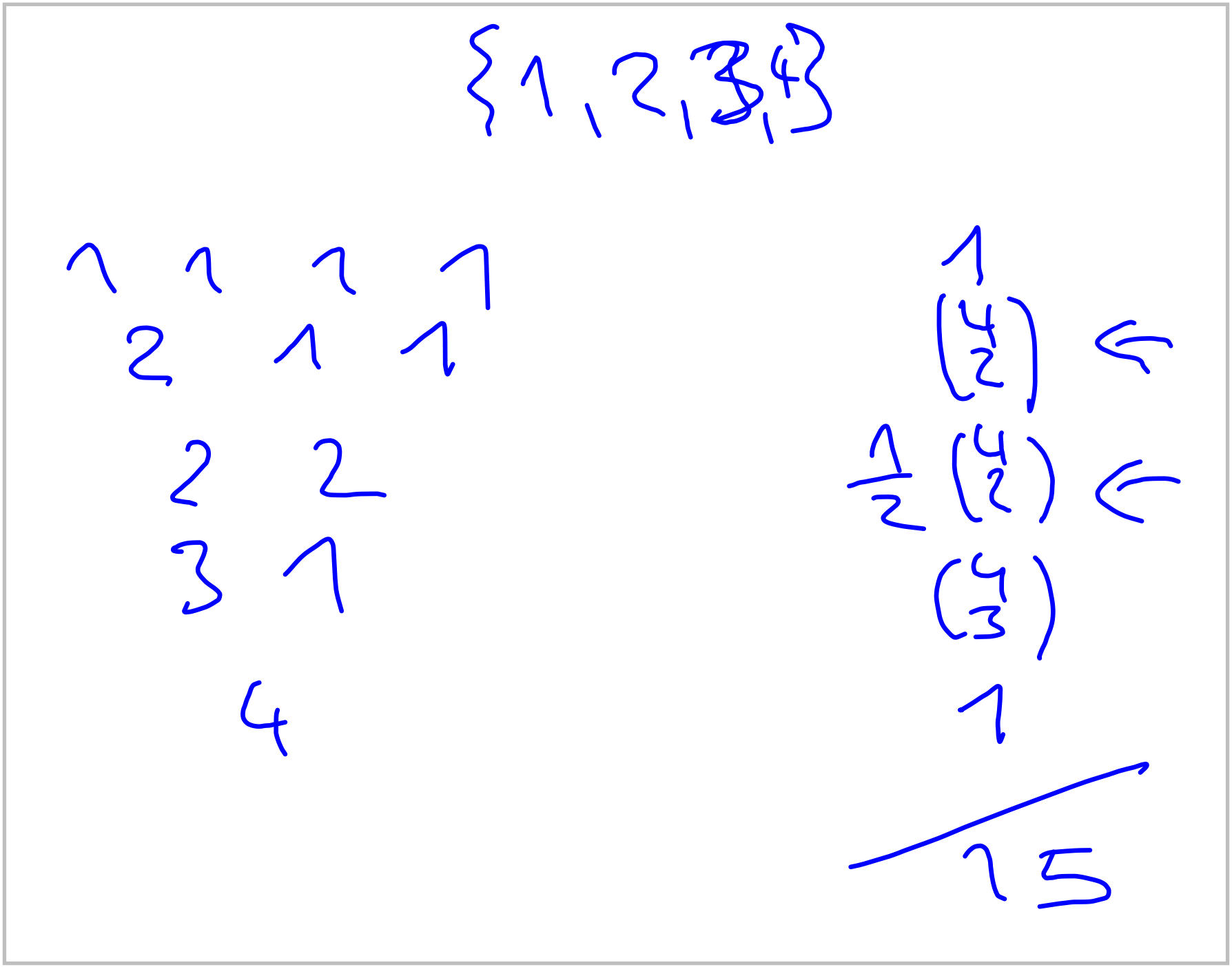
$f \sim g \iff f(\emptyset) = g(\emptyset)$

$\{\sin x, x, \frac{x}{2}, x^2, \ldots\}$

$\{x \neq 1, 1, \ldots\}$



$\langle 0, 360)$


{1,2,3,4}
1 1 1 1
2 1 1
2 2
3 1
4
1
(4 2) ⇐
1/2 (4 2) ⇐
(4 3)
1
15

$a, b \in \mathbb{R} \setminus \{0\}$

$a \sim b \iff \frac{a}{b} \in \mathbb{Q}$

R: $a \sim a \iff \frac{a}{a} = 1 \in \mathbb{Q}$

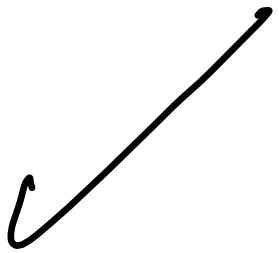
S: $a \sim b \iff \frac{a}{b} \in \mathbb{Q} \iff \left(\frac{a}{b}\right)^{-1} \in \mathbb{Q}$

$= \frac{b}{a}$

$b \sim a \iff \left(\frac{b}{a}\right) \in \mathbb{Q}$

T: $(a \sim b) \wedge (b \sim c) \iff \frac{a}{b}, \frac{b}{c} \in \mathbb{Q}$

$\frac{a}{c} = \frac{\frac{a}{b} \in \mathbb{Q}}{\frac{b}{c} \in \mathbb{Q}} \in \mathbb{Q}$



$X, Y \subseteq \mathbb{N}$

$X \sim Y \iff X \cup Y$ je konečná

$R : X \subseteq \mathbb{N}$ $X \cup X = X$ konečná!

X

$X \cap Y$ je konečná

$R : X \subseteq \mathbb{N}$ $X \cap X = X$ kon

$A, B \in \mathrm{Mat}_2 \mathbb{R}$

$A \sim B \iff AB = BA$

$\mathbb{R}: A \sim A \iff AA = AA$

$S: (A \sim B) \Rightarrow (B \sim A)$

$AB = BA \iff BA = AB$

$T: (A \sim B) \wedge (B \sim C) \iff AB = BA \wedge BC = CB$

$AC \overset{?}{=} CA \qquad ACB = BAC$

$\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} \sim \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \qquad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \sim \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$

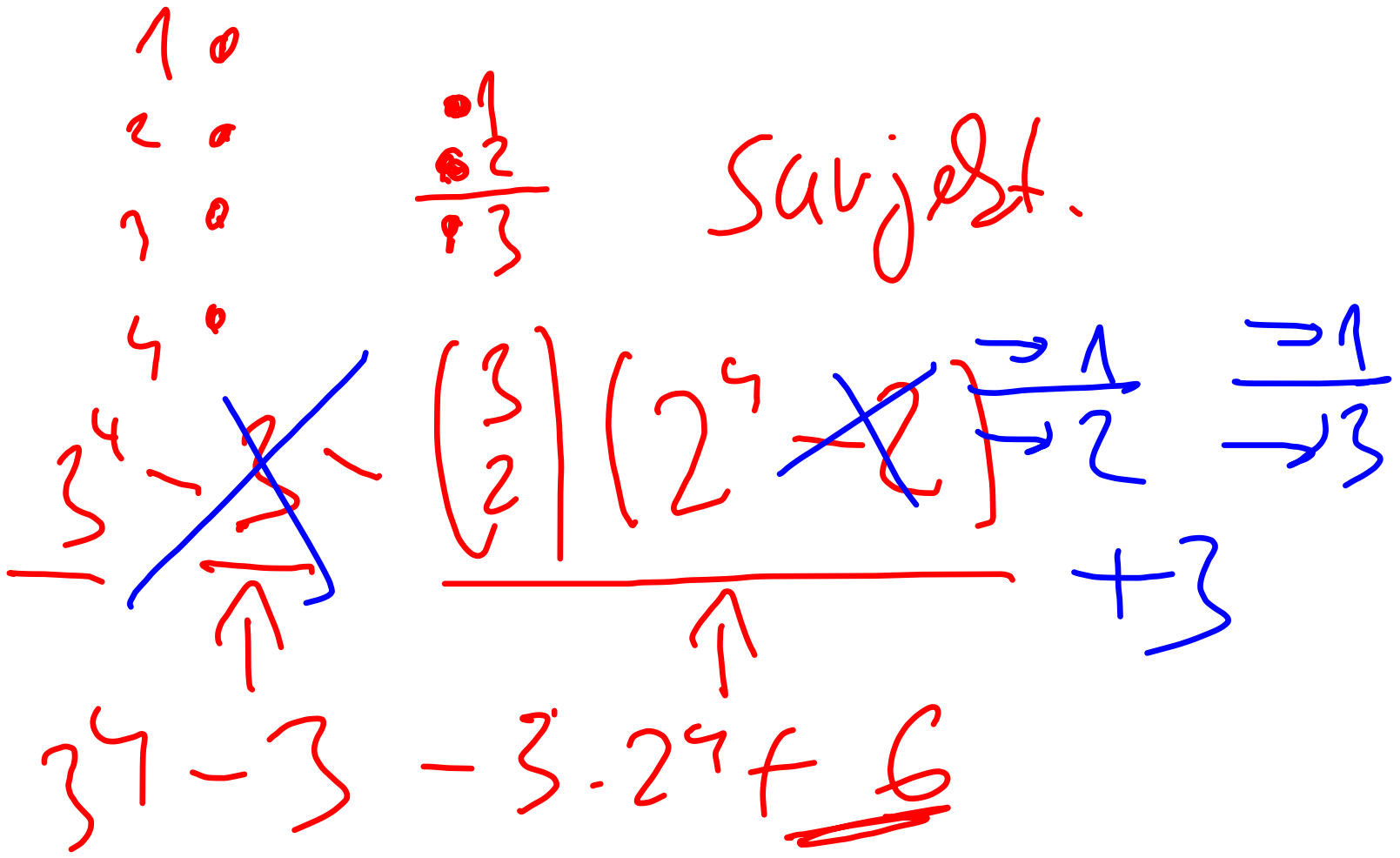
$$\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}\begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \neq$$

$$\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} \sim \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \sim \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$$

$$\Rightarrow \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} \not\sim \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$$


1 0
2 0
3 0
4 0
1
2
3
Svojest.
$3^4 - 3^1$
$\begin{pmatrix} 3 \\ 2 \end{pmatrix} (2^4 - 2)$
$\Rightarrow 1$
$\rightarrow 2$
$\Rightarrow 1$
$\rightarrow 3$
$+3$
$3^4 - 3 - 3 \cdot 2^4 + 6$