

(3)

1.

$$\begin{array}{c}
 (1,1), (1,2), (1,3), \dots \quad | \quad (2,1), (2,2), (2,3), \dots, (m,n) \\
 \downarrow \quad \downarrow \quad \downarrow \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\
 \frac{1}{2} \quad \frac{2}{3} \quad \frac{3}{4} \quad \quad \quad 1 \quad 2 \quad 3 \\
 \underbrace{\hspace{10em}}_{< 1} \quad \quad \quad \underbrace{\hspace{10em}}_{\geq 1}
 \end{array}$$

$A \{a, b\} \quad a \leq b$
 $X \{x, y\} \quad x \leq y$

$$n \leq m \quad (1, n) \leq (1, m) \\
 \downarrow \quad \quad \quad \downarrow \\
 \frac{1}{n+1} \geq \frac{1}{m+1} \quad \quad \quad \frac{n}{n+1} = 1 - \frac{1}{n+1} \leq \frac{m}{m+1} = 1 - \frac{1}{m+1}$$

$$(1, 3) \leq (1, 5) \\
 \frac{3}{4} \leq \frac{5}{6}$$

$$n \leq m \\
 (2, n) \leq (2, m) \\
 \Downarrow \\
 n \leq m$$

$$(2, n) \rightarrow n \\
 (1, n) \rightarrow \frac{n}{n+1}$$

2.

$$\begin{array}{c}
 (n, m) \rightarrow \\
 (2, 3) \rightarrow 2 + \frac{3}{4} \\
 (3, 1) \rightarrow 3 + \frac{1}{2}
 \end{array}
 \quad \quad \quad
 \begin{array}{c}
 (2, 3) \leq (3, 1) \\
 \downarrow \quad \quad \downarrow \\
 2\frac{3}{4} \leq 3\frac{1}{2}
 \end{array}$$

$$(1) \quad \underline{n_1 < n_2} \quad f(n_1, m_1) < f(n_1, m_2) \\
 \Downarrow \\
 n_1 + \text{zlomek} < n_2 + \text{zlomek}$$

$$(2) \quad \underline{m_1 < m_2} \quad f(n, m_1) = n + \frac{m_1}{m_1+1} < f(n, m_2) = n + \frac{m_2}{m_2+1} = n + 1 - \frac{1}{m_2+1}$$

$$n + \frac{m_1}{m_1+1} = n + \frac{m_1+1-1}{m_1+1} = n+1 - \frac{1}{m_1+1} \quad (1)$$

$$(n, m) \rightarrow n + \frac{m}{m+1}$$

$$d \geq 0 \quad \{x, y\} \cap \{z\} = \emptyset$$

$$(m, 1) \geq (n, 1) \quad m \geq n$$

$$\frac{1}{1+m} = 1 - \frac{m}{1+m} \geq 1 - \frac{m}{1+n} = \frac{1}{1+n} < \frac{1}{1+m}$$

$$m \geq n \quad (2, 1) \geq (0, 1)$$

$$(m, s) \leq (n, s) \quad \frac{s}{s} \geq \frac{s}{s}$$

$$n \leftarrow (n, s)$$

$$\frac{n}{1+n} \leftarrow (n, 1)$$

$$(1, s) \geq (0, s) \quad (1, s) \rightarrow (m, n)$$

$$\frac{s}{s} = \frac{s}{s} \quad \frac{s}{s} + s \leftarrow (s, s)$$

$$\frac{s}{s} + s \leftarrow (1, s)$$

$$(m, n) \geq (m, n) \quad m \geq n$$

$$+ n = (s, n) \geq \frac{1}{1+n} + n = (n, n) \quad m \geq n$$

$$1 + \frac{1}{1+n} + n = \frac{1+n}{1+n} + n = \frac{1+n}{1+n} + n$$