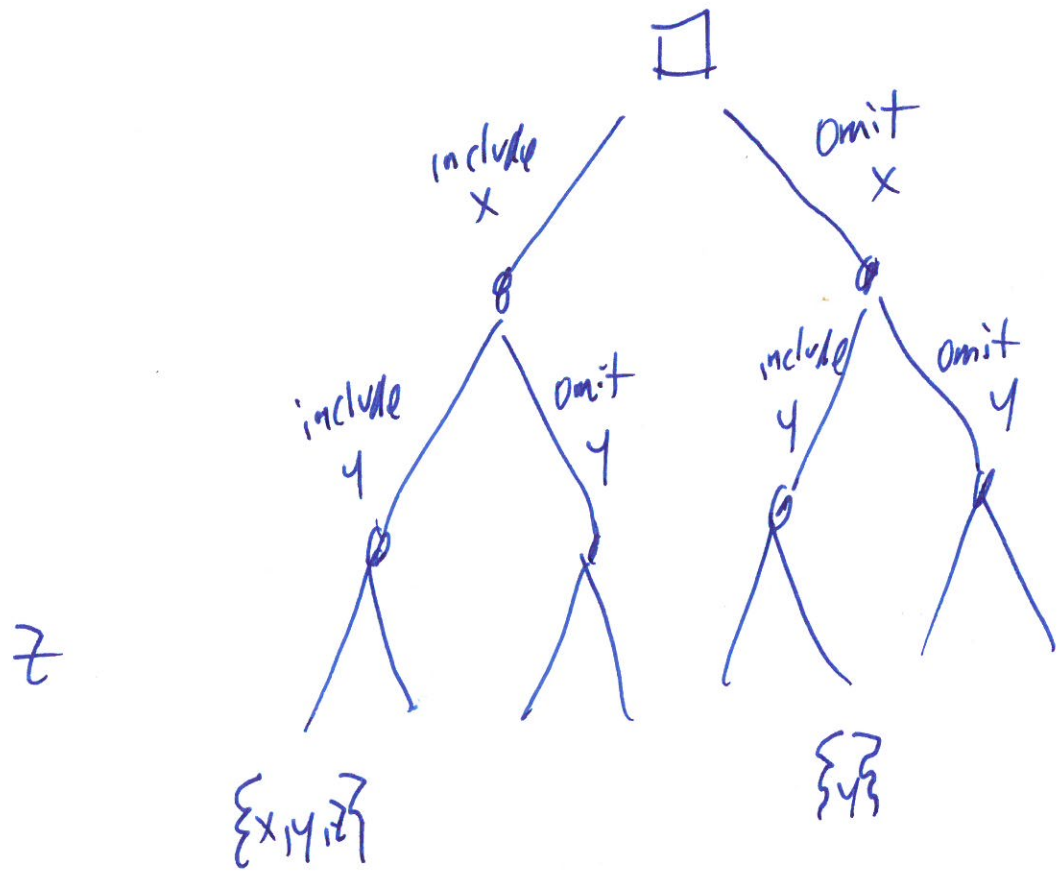


$$P(\{x, y\}) = \{\emptyset, \{x\}, \{y\}, \{x, y\}\}$$

$$P(\{x, y, z\})$$

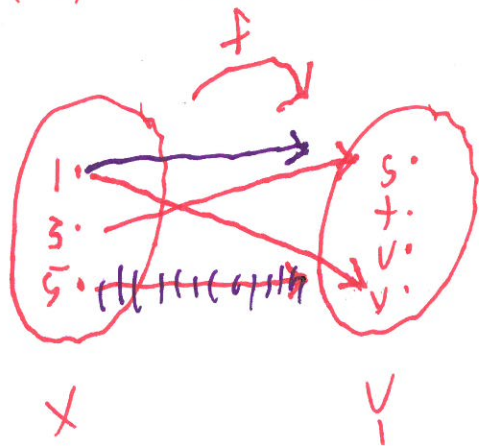


Visualization of Power Set generation

(For Homework 5)

$$3. \quad X = \{1, 3, 5\} \quad Y = \{s, t, u, v\}$$

$$\{(1, v), (3, s), (5, v)\}$$



$$f(3) = s$$

Range of  $f$  ?  $\{s, \cancel{t}, v\}$

Is an inverse image of  $s$ ? yes

6a  $1, -\frac{1}{3}, \frac{1}{5}, -\frac{1}{7}, \dots$

$$f(n) = \frac{1}{2n+1} \cdot (-1)^n = \frac{(-1)^n}{2n+1}$$

11b  $f(2, 1) = (2 \cdot 2 + 1, 3 \cdot 1 - 2) = (5, 1)$

$$f(a, b) = (2a + 1, 3b - 2)$$

$$29a. \quad H(\underline{10101}, \underline{00011}) = 3$$

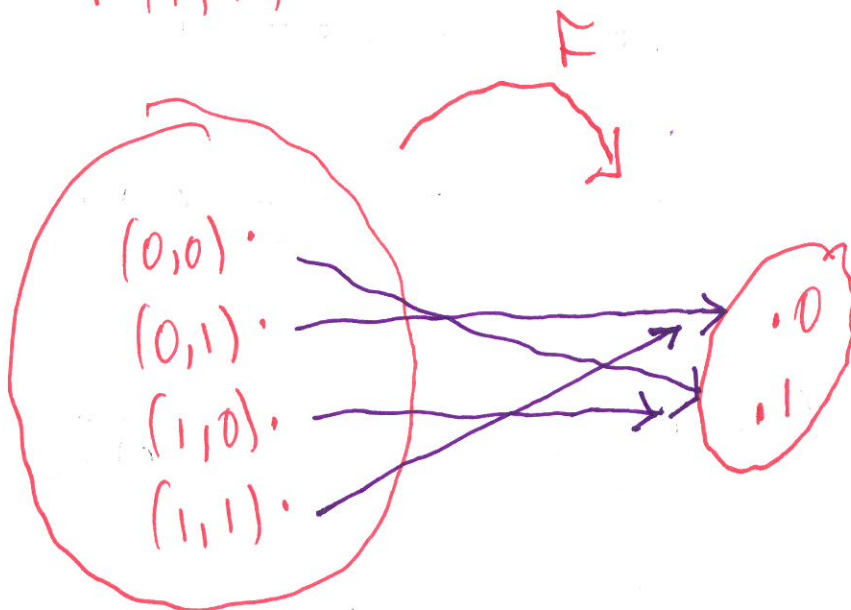
$$H(100, 01110) \\ = H(00100, 01110)$$

$$30a. \quad F(0,0) = 1$$

$$F(0,1) = 0$$

$$F(1,0) = 1$$

$$F(1,1) = 0$$



33.  $g(m/n) = m - n \quad \forall n, m \in \mathbb{Z}$  is not a function

$$\begin{array}{l} m=3 \\ n=5 \end{array} \quad g\left(\frac{m}{n}\right) = 3 - 5 = -2 = g\left(\frac{3}{5}\right)$$

$$\begin{array}{l} m=6 \\ n=10 \end{array} \quad g\left(\frac{m}{n}\right) = 6 - 10 = -4 = g\left(\frac{6}{10}\right) = g\left(\frac{3}{5}\right)$$

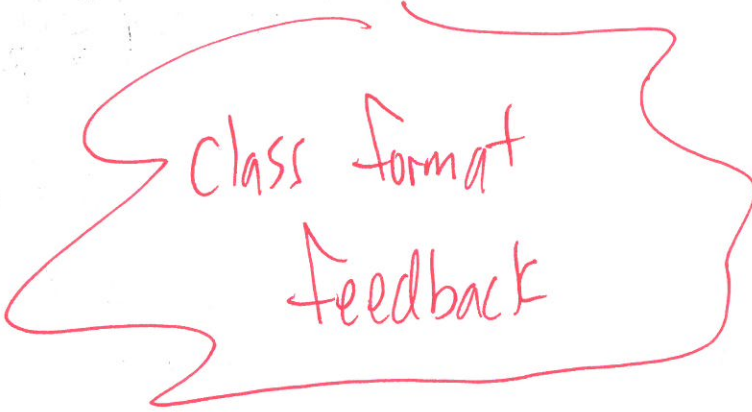
$g$  is not a function since  $\frac{3}{5} = \frac{6}{10}$ ,

$$\text{but } g\left(\frac{3}{5}\right) \neq g\left(\frac{6}{10}\right)$$

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