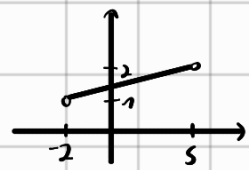


7.22

# 6.122

2.222: 2.222



$$g: [-2, 5] \rightarrow (1, 2)$$

$$[-2, 5] \rightarrow (1, 2) \quad (7)$$

$$g(x) = \begin{cases} \frac{2}{3}x + \frac{1}{3} & : -2 < x < 5 \\ 2 & : x = -2 \end{cases} \quad m = \frac{2-1}{5-2} = \frac{1}{3}$$

$g(x)$  is a continuous function on  $[-2, 5]$ .

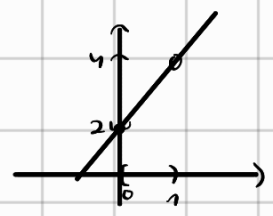
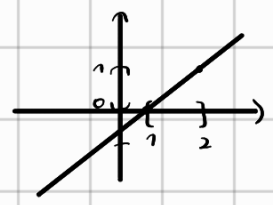
$$h_1: [1, 2] \rightarrow [0, 1] \quad f: [0, 1] \rightarrow [0, 1] \quad h_2: [0, 1] \rightarrow [2, 4] \quad (3)$$

$$h_1(x) = x-1 \quad : x \in [1, 2]$$

$$h_2(x) = 2x+2 \quad : x \in [0, 1]$$

$$f(x) = \begin{cases} x & : x \in (0, 1) \\ 0 & : x = 0 \end{cases}$$

Graph of  $h_1$



Graph of  $h_2$

Graph of  $f$

$$g = h_2 \circ f \circ h_1 \quad g: [1, 2] \rightarrow [2, 4] \quad \Leftarrow$$

3.222

Let  $A$  and  $B$  be sets, then  $|A \cup B| = |A| + |B| - |A \cap B|$ . (7)

$$|A| = |B| = |A \cap B| = N$$

$$N = N + N \Leftarrow |B| + |A| \Leftarrow |A \cup B|$$

Proof

$B \cap A = A \cap B$

4.222

$$|A| = |B| \quad |A-B| = |B-A|$$

Let  $f: A \rightarrow B$  be a function, then  $|A-B| = |B-A|$ .

$$f = \begin{cases} g(x) & : x \in A-B \\ x & : x \in A \cap B \end{cases} \quad f: A \rightarrow B$$

$$|A-B| = |B-A| = 0 \quad B = (0, 2) \quad A = (0, 1) \quad |A| = |B|$$

$$|B-A| = |(1, 2)| = N \neq 0$$

5.7.2

$$|C| = |D| \quad |A| = |B| \quad \text{? } p \text{ - } \text{בדרך} \quad A, B, C, D$$

אולי יר נכון ? (7)

$$|A| = |C| = \{3\} \quad |B| = \{1, 2\} \quad |D| = \{4\}$$

$$|A \cup C| = |\{3\}| = \underline{1} \quad |B \cup D| = |\{1, 2, 4\}| = \underline{3} \quad \neq 1$$

אולי יר נכון ? (7)  $|A-C| = |B-D|$

$$|A-C| = |\emptyset| = 0 \quad |B-D| = |\{1, 2\}| = 2 \quad \neq 0$$

(7) אולי יר נכון ? (7)  $|K \times T| = |T \times K|$

הוכחה נכון נכון אולי יר נכון ? (7)  $g: K \times T \rightarrow T \times K$

$$g(a, b) = (b, a) \quad (a, b) \in K \times T \quad \text{אולי} \quad \text{נכון}$$

$$\underline{\text{לער}} \quad |K \times T| = |T \times K| \quad \Leftarrow$$

7.2.2

$$|(0, 1)| = |(1, \infty)| \quad \underline{\text{אולי}} \quad \underline{(7)}$$

הוכחה נכון נכון אולי יר נכון ? (7)  $g: (0, 1) \rightarrow (1, \infty)$

$$g(x) = e^{\tan(x - \frac{\pi}{2})} + 1$$

$$y = e^{\tan(x - \frac{\pi}{2})} + 1 \Rightarrow y - 1 = e^{\tan(x - \frac{\pi}{2})} \quad / \ln \quad \text{לער}$$

$$\ln(y-1) = \tan(x - \frac{\pi}{2}) \Rightarrow \tan^{-1} \ln(y-1) = x - \frac{\pi}{2}$$

$$\Rightarrow g^{-1}(x) = \frac{\tan^{-1}(\ln(x-1)) - \frac{\pi}{2}}{1}$$

$$\underline{\text{לער}} \quad |(0, 1)| = |(1, \infty)| \quad \text{אולי} \quad \text{נכון} \quad \text{נכון} \quad \text{אולי} \quad \text{יר} \quad \text{נכון} \quad \text{?} \quad \Leftarrow$$

