

MATH 327Homework 11.13(a) c is $a < c < b$.(b) Real numbers a and b , there is a real number c 6(a) s is negative(b) negative, $\sqrt[3]{s}$ is negative(c) $s < 0$, $\sqrt[3]{s} < 0$ 1.25

$$A = \{0, 1, 2\}$$

$$B = \{x \in \mathbb{R}, -1 \leq x < 3\} = [-1, 3)$$

$$C = \{x \in \mathbb{R}, -1 \leq x < 3\} = [-1, 3)$$

$$D = \{x \in \mathbb{Z}, -1 < x < 3\} = \{0, 1, 2\}$$

$$E = \{x \in \mathbb{Z}_+, -1 < x < 3\} = \{1, 2\}$$

$$\emptyset \subset A = \emptyset$$

12 (a) $S \times T = \{(2, 1), (2, 3), (2, 5), (4, 1), (4, 3), (4, 5), (6, 1), (6, 3), (6, 5)\}$

(b) $T \times S = \{(1, 2), (1, 4), (1, 6), (3, 2), (3, 4), (3, 6), (5, 2), (5, 4), (5, 6)\}$

(c) $S \times S = \{(2, 2), (2, 4), (2, 6), (4, 2), (4, 4), (4, 6), (6, 2), (6, 4), (6, 6)\}$

(d) $T \times T = \{(1, 1), (1, 3), (1, 5), (3, 1), (3, 3), (3, 5), (5, 1), (5, 3), (5, 5)\}$

1.34

$$G = \{-2, 0, 2\} \quad H = \{4, 6, 8\}$$

$$V \subseteq G \times H \quad (x, y) \in G \times H \quad \text{if} \quad \frac{x-y}{4} \in \mathbb{Z}$$

(a) $2 \vee 6$ since $\frac{2-6}{4} = -\frac{4}{4} = -1 \in \mathbb{Z}$

~~$(-2) \vee (-6)$~~ since ~~$\frac{-2-(-6)}{4} = \frac{4}{4} = 1 \in \mathbb{Z}$~~ $-6 \notin H$.

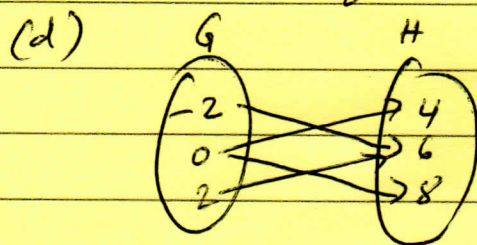
$$(0, 6) \notin V \text{ since } \frac{0-6}{4} \notin \mathbb{Z}$$

$$(2, 4) \notin V \text{ since } \frac{2-4}{4} \notin \mathbb{Z}$$

$$(b) V = \{(-2, 6), (0, 4), (0, 8), (2, 6)\}$$

$$(c) \text{ Domain } \{-2, 0, 2\}$$

$$\text{Codomain } \{4, 6, 8\}$$



12 T is not a function as $(0, 1) \in T$ and $(0, -1) \in T$.
Thus, the same x maps to different y 's.

14 (a) $\text{Domain}(g) = \{1, 2, 3, 4\}$
 $\text{Codomain}(g) = \{a, b, c, d\}$

$$(b) g(1) = c$$

$$g(2) = c$$

$$g(3) = c$$

$$g(4) = c$$