MATH 287 HOMEWORK 10

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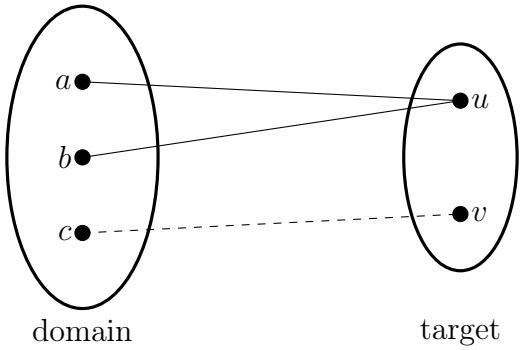
Exercise 1. Suppose f is a function $f : \{a, b, c\} \to \{u, v\}$ and we have $f(a) = u$ and $f(b) = u$. How should we define $f(c)$ if we want f to be surjective (onto)?

Answer. We should define $f(c) = v$. Then f is given by the table:

x	a	b	c
$f(x)$	u	u	v

We can represent f pictorially by:



We used a dashed line to show $f(c) = v$ that was the answer to the question. $\diamond$

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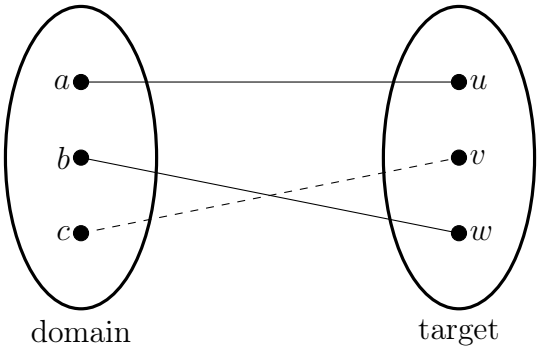
Exercise 2. Suppose f is a function $f : \{a, b, c\} \to \{u, v, w\}$ and we have $f(a) = u, f(b) = w$. How should we define $f(c)$ if we want f to be injective (one-to-one)?

Answer. We should define $f(c) = v$.

Then f is given by the table:

x	a	b	c
$f(x)$	u	w	v

We can represent f pictorially by:



We used a dashed line to show $f(c) = v$ that was the answer to the question. $\diamond$

Exercise 3. Finally, redo one problem from a previous homework assignment. Your score will count for this homework, not the previous one. Along with your answer, write a short reflection essay (1-2 paragraphs) about what you learned.