Discrete Math 3.1 Functions

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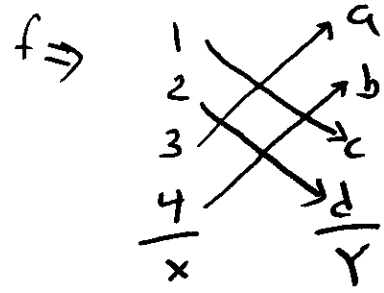
Section Review # 1, 4-8 ALL - see back of book

page 132 Exercises #1-15 odd

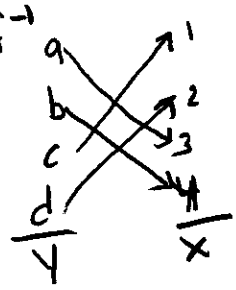
(#1) see back of book

(3) It is a function, Domain: $X = \{1,2,3,4\}$ range $Y = \{a,b,c,d\}$
it is both 1-1 and onto



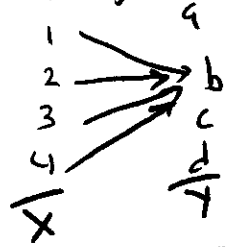
inverse $\{(c,1),(d,2),(a,3),(b,4)\}$

domain $\{a,b,c,d\}$ range $\{1,2,3,4\}$

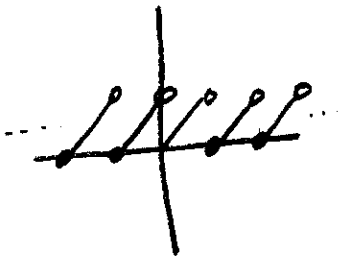


(5) It is a function: Domain: $X = \{1,2,3,4\}$ range: $\{b\}$

It is NOT 1-1 (injective)
It is NOT onto (surjective)



(7) $f(x) = x - \lfloor x \rfloor$



(11) $f(x) = n^2 - 1$
since $f(1) = f(-1)$ this function is not 1-1.

since $f(n)^2 = n^2 - 1 \geq -1$
$\therefore f(n) \neq -2$, f is not onto

(13) see Back of Book

(15) $f(n) = n^3$
if $f(m) = f(n)$, then $m^3 = n^3$ or $m = n$ $\therefore$ f is 1 to 1
$f(n) = n^3$, there does not exist k such that $f(k) = 5$
↑ integer.
$\therefore f(n) = n^3$ is not onto