7.1

2) Let $X = \{1,3,5\}$ and $Y = \{a,b,c,d\}$

Define $g: X \to Y$

X		Y
1	S	a
3		b
5		c
		d

a) Domain of g $X = \{1,3,5\}$
co domain of g $Y = \{a,b,c,d\}$

b) $g(1) = b$ $g(3) = b$ $g(5) = b$

c) range of $g = \{b\}$

D) 3 isn't an INVERSE of a
1 is an INVERSE of b

e) $\{1,3,5\}$ is the INVERSE of b; c doesn't exist

f) g as ordered pairs: $\{(1,b),(3,b),(5,b)\}$

9) Define a function of $S: Z^+ \to Z^+$ as follows
For each positive INT n
$S(n)$ = the sum of the positive divisors of n

b) $S(5) = 1+5 = 6$

c) $S(18) = 1+2+3+6+9+18 = 39$

f) $S(21) = 1+3+7+21 = 32$

14) Let $J_5 = \{0,1,2,3,4\}$ and define functions $h: J_5 \to J_5$ and $k: J_5 \to J_5$ as follows for each $x \in J_5$

$h(x) = (x+3)^3 \bmod 5$ and $k(x) = x^3 + 4x^2 + 2x + 2$

mod 5 Is $h = k$? yes they give same output

Element	h	k
0	2	2
1	4	4
2	0	0
3	1	1
4	3	3

19) Use the def of log to prove that for any positive real number b with $b \neq 1$, $\log_b 6 = 1$

$\log_b x = y \iff b^y = x$

$\log_b b = 1 \iff b^1 = b$

29) Find $H(0110, 1011) = 2$

Hamming distance