

CS581 Worksheet # 7

Due by midnight, Thursday, May 16th, Submit via D2L

1. Let B be the set of all infinite sequences over $\{0,1\}$. Show that B is uncountable, by using a diagonalization argument.
2. Let $A_{\epsilon\text{CFG}} = \{ \langle G \rangle \mid G \text{ is a CFG that generates } \epsilon \}$. Show that $A_{\epsilon\text{CFG}}$ is decidable.
3. Let X be the set $\{1,2,3,4,5\}$ and Y be the set $\{6,7,8,9,10\}$. We describe the functions $x: X \rightarrow Y$, and $g: X \rightarrow Y$ in the following tables. Answer each part and give a reason why if the answer is negative.
 4. Is f one-to-one?
 5. Is f onto?
 6. Is f a correspondence?
 7. Is g one-to-one?
 8. Is g onto?
 9. Is g a correspondence?

n	f(n)
1	6
2	7
3	6
4	7
5	6

n	g(n)
1	10
2	9
3	8
4	7
5	6