MATH 103	Socha	cki	Turn In	Assignment 5	5
Due June 9,				Control Contro	

Name _	Key	West	
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Work on the following problems. Your work must be written neatly on 8.5x11 inch paper with this sheet on the top of your write up or I will not grade your work. All necessary work must be shown for credit. Your work must represent the question asked. You may discuss this assignment with others, but all work turned in must be your own work. Your work is more important than the answer.

I have neither received nor given help on this project.

(Signature)

1. You have a standard card deck of 52 cards. How many different seven card hands can you draw from this deck? How many of these seven card hands have four of a kind?

2. You flip a coin six times. You have six spaces. You write down a 0 for a tail and a 1 for a head in each space depending on what you get when you flip the coin. How many of these sequences that you write down will have exactly two 1's in them? Write down the base two value for each of these.

3. Convert the following numbers.

(a) 147.35 to base two (b) $(1AB23.012)_{12}$ to base ten.

4. Give the two "Pascal" triangles for (a) 15 and (b) 25.

5. Convert the following sequences of 0,1 to numbers. (a) $\{0,1,0,1,0,1,0,1,\overline{0,1}...\}$ (b) $\{1,1,0,1,0,1,0,1,0,1,\overline{0,1}...\}$

6. Give a sequence of 0,1 for each of the following numbers. (a) 0.3 (b) $\sqrt{5}$

7. Give two ways to determine a decimal for (a) $\frac{1}{7}$ and (b) $\frac{1}{11}$.

8. Give the first five terms in the "Fibonacci" sequences that start (a) 0,1 (b) 1,1 (c) 1,2 (d) 3,7 (e) 4,5

$$C_{7}^{52} = \frac{52!}{7!45!} = \frac{52.51.50.49.48.47.46}{7.6.5.4.3.2.1}$$

$$= 133,784,560$$

2.

$$C_2^6 = \frac{6!}{2! \cdot 4!} = \frac{6 \cdot 5}{2 \cdot 1} = 15$$

$$9)0100=20$$

$$(0)$$
 (1) (1) (1) (1) (2) (3) (3) (3) (3) (3) (4) (3) (4) (4) (4) (5)

$$12)$$
 $100010 = 34$ $12)$ $100 = 36$

$$12)$$
 $13)$
 $100100 = 36$
 $13)$

$$(13)$$
 (13)

3(a) 147.35

$$= 1 \times 12^{4} + A \times 12^{3} + B \times 12^{2} + Z \times 12 + 3 + \frac{1}{12^{2}} + \frac{2}{11} \cdot \frac{1}{12^{2}}$$

$$= 12^{4} + 10 \times 12^{3} + 11 \times 12^{2} + 2 \times 12 + 3 + \frac{13}{12^{2} \cdot 11}$$

$$= 39627 + \frac{13}{11 \cdot 12^{2}}$$

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4)(a) (11)
                             (15)
                                10 25
                                  15 75 125
          7.115
                                 1 20 150 500 625
         1818165
                              154 = 5062,5
     15×113 = 19965
                             (25)
       (11)
  (b)
                               4 20 25
        275
29125
                              8 60 150 125
                               16 160 600 1000 625
          2 11.21 17 5
                               25= 390,625
      25 \times 11^3 = 33275
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5.(a)
$$X = \{0,1,0,1,0,1,0,1\}$$

 $X = 0.01010101...$
 $2X = 0.101010$
 $2^{2}X = 1.010101$
 $- X = 0.010101$
 $3X = 1$
(b) $X = \{1,1,0,1,0,1,0,1,0,1\}$
 $X = 0.1101$
 $2X = 1.101$
 $2X = 1.101$

6. (a) 0.3
0.6
$$a_{1}=0$$

1.2 $a_{2}=1$
0.4 $a_{-3}=0$
0.8 $a_{-4}=0$
1.6 $a_{-5}=1$
1.2 $a_{-6}=1$
0.3 = $\begin{cases} 0,1,0,0,1 \end{cases}$

(b)
$$\sqrt{5} \approx 2.236$$

10 0.236

0.472

0.944

1.888

1.776

1.552

1.104

0.208

1020,0,1,1,1,1,0,...3

7. (a)
$$\frac{1}{7}$$
 $\frac{142857}{711.000000}$
 $\frac{7}{11.000000}$
 $\frac{7}{28}$
 $\frac{30}{28}$
 $\frac{20}{14}$
 $\frac{14}{60}$
 $\frac{35}{50}$
 $\frac{49}{11}$
 $\frac{1}{7} = 0.142857$
(b) $\frac{1}{11}$
(c) $\frac{1}{2}$
 $\frac{2x-7x^2}{0.14287}$
 $\frac{30.14287}{0.142857}$
 $\frac{142857}{0.142857}$

(c)
$$\frac{x}{2x-11x^2}$$

 $\frac{1}{11}$ $\frac{1}{11}$

2x-7x2

0,14285714

(c) 1,2,3,5,8,13

(e) 4, 5, 9, 14, 23, 37 (d) 3,7,10,17,27,44