Statistics 3080
Homework 1
Due: Wednesday, January 31

Complete the following problems in a R Markdown file and submit your compiled PDF.

Problem 1: Create, store, and print the following sequences. You may use the concatenate function to combine two sequences, but not as the only mechanism to yield the answer.

(a)
```
[1] "a" "a" "a" "a"
```

(b)
```
 [1]   2   4   6   8  10  12  14  16  18  20  22  24  26  28  30  32
[17]  34  36  38  40  42  44  46  48  50  52  54  56  58  60  62  64
[33]  66  68  70  72  74  76  78  80  82  84  86  88  90  92  94  96
[49]  98 100
```

(c)
```
 [1] 0 0 0 0 1 1 1 2 2 3
```

(d)
```
[1] 1 1 1 2 2 2 3 3 3
```

(e)
```
[1] 1 2 3 4 5 4 3 2 1
```

(f)
```
 [1]  1  2  3  4  5  6  7  8  9 10
```

(g)
```
 [1]    1  1/2  1/3  1/4  1/5  1/6  1/7  1/8  1/9 1/10
```

* It is fine if the printed vector is shown in decimal form

(h)
```
[1]   1   8  27  64 125 216
```

* These are all cubes

(i)
```
 [1] 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976
[14] 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989
[27] 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002
[40] 2003
```

(j)
```
 [1]    0   25   50   75  100  125  150  175  200  225  250  275  300
[14]  325  350  375  400  425  450  475  500  525  550  575  600  625
[27]  650  675  700  725  750  775  800  825  850  875  900  925  950
[40]  975 1000
```

Problem 2: Dave and Nancy have spent a week in Las Vegas. Every day, Dave has camped out at the poker table and Nancy has kept to the roulette wheel. At the end of the week, they decide to analyze their winnings and loses. For simplicity, we will use earnings to refer to both winnings and loses.

(a) Create and save a vector called `poker_vect` and `roulette_vect` containing the following information:

- On Monday, Dave won $140 and Nancy lost $20
- On Tuesday, Dave lost $50 and Nancy lost $50
- On Wednesday, Dave won $20 and Nancy won $100
- On Thursday, Dave lost $120 and Nancy lost $225
- On Friday, Dave won $240 and Nancy won $20

(b) Create, save, and print a vector called `tot_earn` that contains the couple's total daily earnings.

(c) Determine the couple's total earnings over the week.

(d) Determine the percentage of the couple's total earnings that is due to Dave's poker games.

(e) Determine the average daily earnings of Nancy's roulette adventures.

(f) Whose average daily earnings is higher?

(g) Use the vector(s) you have created to determine which days Nancy won. You should specify the days of the week as well as show what you used to determine them.

(h) Subset the vector `roulette_vect` to show Nancy's winning amounts.