

Problem Set 2

Use Matlab to calculate the answers to the following:

Problem 1

315 people have to be transported using buses that have 37 seats. By typing one line (command) in the Command Window, calculate how many seats will remain empty if enough buses with the order to transport all the people. (Hit: use Matlab built in function ceil.)

Problem 2

assign the number 316,501.6732 a and calculate the following by typing one command:

- (a) Around the number to the nearest hundredth.
- (b) Round the number to the nearest thousand

Problem 3

The number of combinations $C_{n,r}$ of taking r object out of n objects is given by

$$C_{n,r} = \frac{n!}{r!(n-r)!}$$

- a) Determine how many combinations are possible in a lottery game for selecting 6 numbers that are drawn out for 49.
- b) Using the following formula, determine the probability of guessing two out of the six drawn numbers

$$\frac{C_{6,2}C_{43,4}}{C_{49,6}}$$

Problem 4

The spread of a computer virus through a computer network can be modeled by

$$N(t) = 20e^{0.15t}$$

where $N(t)$ is the number of computers infected and t time in minutes.

- a) Determine how long it takes for the number of infected computers to double
- b) Determine how long it takes for 1 million computers to be infected.

Problem 5

The voltage difference V_{ab} between two points a and b in the Wheatstone Bridge circuit is:

$$V_{ab} = V \left(\frac{R_1 R_3 - R_2 R_4}{(R_1 + R_2)(R_3 + R_4)} \right)$$

Calculate the voltage difference when $V = 14$ volts, $R_1 = 120.5\Omega$, $R_2 = 119.3\Omega$, $R_3 = 121.2\Omega$, and $R_4 = 118.8\Omega$.

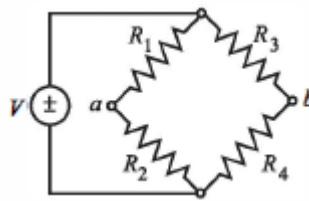


Figure 1: Problem 5 Diagram