CSE 21 Homework 2 Solutions

Chapter3

All of the solutions are given in the text except for 3.43 and 3.46, so I will give solutions for these only.

Problem 3.43 **Solution** So for (a) the three girls can sit together 4 different ways and we have $P(3,3)$ ways to choose the boys and then $P(3,3)$ ways to choose the girls. Thus we get

$$\frac{4 \times P(3,3) \times P(3,3)}{P(6,6)} = \frac{1}{5},$$

and for b

$$\frac{2 \times P(3,3) \times P(3,3)}{P(6,6)} = \frac{1}{10},$$

is the solution.

Problem 3.46 **Solution** Here we use the fact that, given any triangle the sum of the length of any two of its sides is always greater then the length of the third side: for our line segment

A————————X——————————O——————————————B

we get

$$AX + XB > AO$$

$$AX + AO > XB$$

$$AO + XB > AX$$

thus the region for which x can be picked such that a triangle is formed lies between $\frac{1}{2}AO$ to $\frac{1}{2}BO$, giving

A————- $\frac{1}{2}AO$——————-O—————— $\frac{1}{2}BO$ ——————B

thus giving

$$P(\frac{1}{2}AO < X < \frac{1}{2}BO) = \frac{1}{2}.$$