Bioinformatics I
WS 15/16
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1	2	3	4	$\sum$ (7)

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Assignment 5

(Handed in 16. November 2015)

Theoretical Assignment - *Comparison with at most l mismatches*

Assume two sequences of length t with l mismatches. In the worst case, all mismatches are distributed uniformly. Than both sequences will share $l+1$ tuples of length $\lfloor \frac{t}{l+1} \rfloor$.

So both sequences share $l+1$ k-tuples of length $k = \lfloor \frac{t}{l+1} \rfloor$ and for each $k \leq \lfloor \frac{t}{l+1} \rfloor$ they share $(l+1) * \lfloor \frac{\lfloor \frac{t}{l+1} \rfloor}{k} \rfloor$ k-tuples.

Theoretical Assignment - *Linear programming by hand*

The feasible region of this linear program is shown in figure 1, where the red line is constraint 1, green line is constraint 2, constraint 3 is drawn as a blue line and the yellow line is constraint 4.

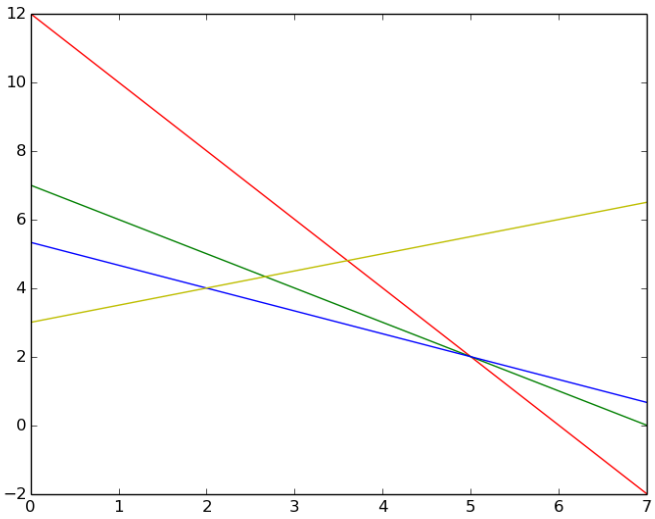

Figure 1: feasible region of linear program

Theoretical Assignment - *Bonus: Carillo-Lipman bound*