

**MATH 113: DISCRETE STRUCTURES**  
**READING QUESTIONS FOR WEDNESDAY WEEK 3**

**Reading assignment.** *DM:EB* §§1.7, 1.8

*Problem 1.* Do some basic algebra to check that

$$n(n-1)(n-2)\cdots(n-k+1) = \frac{n!}{(n-k)!}$$

as long as  $1 \leq k \leq n$ . Does the formula on the left-hand side make sense when  $k > n$ ? What about the formula on the right-hand side?

*Problem 2.* 1.8.2 from *DM:EB*

*Question 3.* Give both algebraic and combinatorial (*i.e.*, bijective) arguments proving that  $\binom{n}{1} = n = \binom{n}{n-1}$ .