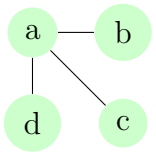
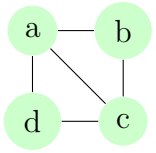
MATH 579: Combinatorics

Homework 9: Due Nov.13

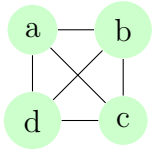
1. Find the number of integers in $[1, 1000]$ relatively prime to 70.
2. Find the number of integers in $[1, 720]$ relatively prime to 720.
3. Find the number of integers in $[1, 1000]$ relatively prime to 210.
4. Find the chromatic polynomial for:



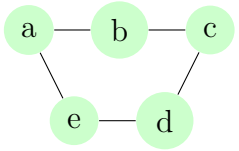
5. Find the chromatic polynomial for:



6. Find the chromatic polynomial for:



7. Find the chromatic polynomial for:



8. Determine the number of solutions, in nonnegative integers, to $a + b + c + d = 30$, where $a \leq 10$, $b \leq 11$, and $c \leq 12$.
9. Determine the number of solutions, in nonnegative integers, to $a + b + c + d = 30$, where $a \leq 10$, $b \leq 10$, and $c \leq 10$.
10. Determine the number of solutions, in nonnegative integers, to $a + b + c + d = 30$, where $3 \leq a \leq 10$, $2 \leq b \leq 11$, and $1 \leq c \leq 12$.
11. Determine the number of l.o.d.e.'s of length 10, drawn from [10], where exactly two integers are in their natural position.