

Extra credit problems

Math 485

0. Find a mistake or misprint in “Extra pearls”. (The score depends on the types of mistakes).

1. Assume d_1, \dots, d_p is a sequence of integers in a nonincreasing order. Show that it is multigraphic if and only if $d_p \geq 0$, the sum $d_1 + \dots + d_p$ is even and

$$d_1 \leq d_2 + \dots + d_p.$$

(A sequence of integers d_1, \dots, d_p is called *multigraphic* if it appears as a sequence of degrees of a multigraph.)

2. Assume that the sequence d_1, \dots, d_p is graphic, $d_i \geq 1$ for each i and

$$d_1 + \dots + d_p \geq 2 \cdot (p - 1).$$

Show that there is a connected graph G with the degree sequence d_1, \dots, d_p .

3. Show that in any connected graph G there is a vertex v such that $G - v$ is connected.