

Homework DM II

Section 9.1: 3-9, 13, 16

Section 9.2: 1-5, 7-10, 18, 20, 20-25, 26, 28, 29, 30, 31, 32-35, 37, 47, 48, 49, 53a, 53b, 54-56

Section 9.3: 1, 3, 5, 7, 9, 10, 11, 13, 15, 19, 21, 23, 25, 28, 29, 32 (except e), 34-42, 46, 50-55

Graphical Sequences Problems:

1. 4, 4, 4, 4, 4
2. 2, 2, 2, 2, 2, 2
3. 3, 3, 3, 2, 2, 2, 2, 1
4. 4, 3, 1, 1, 1
5. 6, 4, 4, 3, 3, 2
6. 4, 4, 4, 4, 3, 2, 1, 1, 1
7. 4, 3, 3, 2, 2, 1, 1
8. 5, 3, 3, 2, 2, 2, 0
9. 5, 4, 4, 3, 1, 1, 1
10. 4, 4, 3, 3, 2, 2, 1, 1
11. 4, 4, 4, 3, 3, 3, 3, 2
12. 6, 5, 5, 4, 3, 3, 2, 2, 1, 1
13. Let G be a graph with $n \geq 2$ vertices and $e = n - 1$ edges. Prove the existence of at least two vertices u and v such that $\deg(u) + \deg(v) \leq 2$.
14. Determine, with proof, when the sequence of n 1's is graphical.
15. Determine, with proof, when the sequence of n 3's is graphical.
16. Determine, with proof, when the sequence of n 5's is graphical.

Section 9.4: 1-6, 10-12, 18, 19, 21, 29-33, 37

Section 9.5: 1-10, 26, 27, 28, 30-40, 44, 45, 56-63

Section 9.7: 1-9, 12-14, 19-25

Section 9.8: 1-13, 15, 17-19, 21, 22

Find a graph G such that $\chi(G) = 4$ but G contains no triangles.

Chromatic Polynomial handout: 1, 3, 7, 11-14

1. Can two non-isomorphic graphs have the same chromatic polynomial? Explain.