

## Book Errata

for *A First Course in Graph Theory and Combinatorics*  
by Sebastian M. Cioabă and M. Ram Murty

Despite our best efforts, some typos and errors went undetected in the first version of the book. We list below the known typos/errors.

- Chapter 1

P6: On line 6, remove *closed* before *cycle*.

P6: In the definition of an Eulerian graph, add *without isolated vertices*.

P7: The first part of the proof of Theorem 1.5.1 applies to the each component of the graph.

P8: In Exercise 1.6.5, change  $\#E(X)$  to  $|E(X)|$ .

P9: Exercise 1.6.20: Remove *edges* after *less than or equal to*  $\lfloor \frac{n^2}{4} \rfloor$ .

- Chapter 2

P15: On line 2, replace  $\lfloor x + 1/2 \rfloor$  by  $\lfloor x + \frac{1}{2} \rfloor$ .

P15: On line 20, change *an involution on  $n - 1$  letters* to *an involution on  $n - 2$  letters*.

P16: On line 8, change *At the end of each month* to *Every month from the 2nd month on*.

P17: On line 7, change  *$n - 2$  nonintersecting diagonals* to  *$n - 3$  non-intersecting diagonals*.

P22: In Exercise 2.7.13, change  *$n - 2$  nonintersecting diagonals* to  *$n - 3$  non-intersecting diagonals*.

- Chapter 3

P26: Corollary 3.3.2, change  $k < n$  to  $k > n$ .

P31: Add *for  $k \geq 2$*  at the end of Exercise 3.6.11.

P32: In Exercise 3.6.20, remove *the* before *statements*.

- Chapter 4

P36: In the proof of Theorem 4.3.1, change  *$B$  is  $0, 1$  matrix* to  *$B$  is a  $(0, 1)$ -matrix*.

P37: The statement (3) of Theorem 4.3.2 is not correct when the graph has an odd number of vertices. It should be replaced with *If  $|V(X)|$  is even, the characteristic polynomial of  $X$  is a polynomial in  $\lambda^2$  and if  $|V(X)|$  is odd, then the characteristic polynomial of  $X$  multiplied by  $\lambda$  is a polynomial in  $\lambda^2$* .

- Chapter 5

P50: In Exercise 5.5.10, the right hand side should be

$$\sum_{i,j} \binom{r}{i} \binom{s}{j} (-1)^{i+j} T(r-i, s-j) (s-j)^i (r-i)^j.$$

- Chapter 6

P55: Add *when  $x \leq y$*  after  $\mu(x, y) = (-1)^{y-x}$ . Add *when  $A \subset B$*  after  $\mu(A, B) = (-1)^{|B|-|A|}$ .

P56: On line 6, change *Let  $G(J)$  be those elements* to *Let  $G(J)$  be the number of those elements*.

P69: In Exercise 6.9.3., change  $\sum_{n \leq x} F(x/n)$  to  $\sum_{1 \leq n \leq x} F(x/n)$  and  $\sum_{n \leq x} \mu(n)G(x/n)$  to  $\sum_{1 \leq n \leq x} \mu(n)G(x/n)$ .

P70: Add *for*  $\lambda \geq 0$  at the end of Exercise 6.9.12.

P71: In Exercise 6.9.20, add *the chromatic polynomial of  $X$  equals* between *that* and  $p_X(\lambda) = \sum_{F \subseteq E(X)} (-1)^{|F|} \lambda^{c(X[F])}$ .

- Chapter 7

P72: On line 9, remove *a* between *Here are* and *few examples*.

- Chapter 8

P90: In Theorem 8.3.1, change the necessary and sufficient condition for the existence of a system of common representatives to *for any collection of sets  $A_i$  with  $i \in I$ , there are at least  $|I|$  subset  $B_j$  that  $B_j \cap (\cup_{i \in I} A_i) \neq \emptyset$ .*

P90: In the definition of a doubly stochastic matrix, add *with non-negative entries*.

P99: In Exercise 8.8.20, change  $\cup_{i \in I} V_i$  to  $\text{Span}(\cup_{i \in I} V_i)$ .

- Chapter 9

P110: The left hand side of the first displayed identity should be

$$(|z|^2 + |w|^2)(|u|^2 + |v|^2)$$

Two lines below this line, it should be  $v = y_3 + iy_4$ .

- Chapter 10

P118: On line 5, add *at an interior point* after *so that no two edges intersect*.

P118: On line 9, change *a vertex of the graph* by *an edge of the graph*.

P118: In Theorem 10.1.1, add *finite* before *connected planar graph*.

P120: The statement of Kuratowski's Theorem is obviously incorrect. Change *a graph is planar if and only if it can be edge-contracted to  $K_5$  or  $K_{3,3}$*  to *a connected graph is planar if and only if it cannot be edge-contracted to  $K_5$  nor to  $K_{3,3}$ .*

P124: In Heawood's Theorem (Theorem 10.3.2), change  $\lceil \frac{7+\sqrt{1+48g}}{2} \rceil$  to  $\lfloor \frac{7+\sqrt{1+48g}}{2} \rfloor$ .

P124: In the proof of Heawood's Theorem, change  $c = \lceil \frac{7+\sqrt{1+48g}}{2} \rceil$  to  $c = \frac{7+\sqrt{1+48g}}{2}$ .

- Chapter 11

P139: In Exercise 11.4.11, change  $k \leq 2n + 1$  to  $k \leq 2n - 1$ . Also, change  $k = 2n + 2$  to  $k = 2n$ .

- Chapter 12

P143: On line 9 from the bottom of the page, remove the first  $\leq$  and replace the second  $\leq$  by  $=$ .

- Hints

P164: In Exercise 6.9.4: change *Use 6.9.1* to *Use 6.9.3*.