

ERRATUM TO “MINIMUM NUMBER OF DISTINCT EIGENVALUES OF GRAPHS”

BAHMAN AHMADI , FATEMEH ALINAGHIPOUR , MICHAEL S. CAVERS , SHAUN
FALLAT , KAREN MEAGHER , AND SHAHLA NASSERASR

In this note, we wish to add an additional hypothesis to Theorem 4.4, which in turn impacts the resulting original conclusions of Corollaries 4.5 and 4.6 as presented in the paper [Minimum Number of Distinct Eigenvalues of Graphs, The Electronic Journal of Linear Algebra, Volume 26, pp. 673-691, 2013].

Consider the following necessary notation. Suppose $\alpha \subseteq \{1, 2, \dots, m\}$ and $\beta \subseteq \{1, 2, \dots, n\}$. For a matrix $A \in M_{m,n}$, $A[\alpha, \beta]$ denotes the submatrix of A lying in rows indexed by α and columns indexed by β . For any vertex v of a graph G , the *neighborhood set of v* , denoted by $N(v)$, is the set of all vertices in G adjacent to v .

THEOREM 4.4 *Let G be a connected graph on n vertices with $q(G) = 2$. Then, for any independent set of vertices $\{v_1, v_2, \dots, v_k\}$, that satisfies for each $i = 1, 2, \dots, k$ there exists a $j \neq i$ for which $N(v_i) \cap N(v_j) \neq \emptyset$, we have*

$$\left| \bigcup_{i \neq j} (N(v_i) \cap N(v_j)) \right| \geq k.$$

In the original version of this theorem (see Theorem 4.4 in the aforementioned paper) we inadvertently omitted the possibility that for some i , $N(v_i) \cap N(v_j)$ is empty for each $j \neq i$. Assuming that this possibility does not arise, the original proof goes through as it appears. As noted in our work, the next two results are immediate consequences of Theorem 4.4; however, we need to account for the additional case that was previously omitted. We include the revised statements of both results here for clarity and completeness.

COROLLARY 4.5 *Let G be a connected graph on $n \geq 3$ vertices with $q(G) = 2$. Then, any two non-adjacent vertices must have at least two common neighbors or none at all.*

COROLLARY 4.6 *Suppose $q(G) = 2$, for a connected graph G on $n \geq 3$ vertices. If a vertex v_1 has degree exactly two with adjacent vertices v_2 and v_3 , then every vertex v , different from v_2 and v_3 , has exactly the same neighbors as v_1 or has no common neighbors with v_1 .*