Borodin, O. V.; Glebov, A. N.; Raspaud, A.
Planar graphs without triangles adjacent to cycles of length from 4 to 7 are 3-colorable.
(English) [Zbl 1203.05048]

Summary: It is known that planar graphs without cycles of length from 4 to 7 are 3-colorable [O. V. Borodin, A. N. Glebov, A. Raspaud, and M. R. Salavatipour, “Planar graphs without cycles of length from 4 to 7 are 3-colorable,” J. Comb. Theory, Ser. B 93, No. 2, 303–311 (2005; Zbl 1056.05052)] and that planar graphs in which no triangles have common edges with cycles of length from 4 to 9 are 3-colorable [O. V. Borodin, A. N. Glebov, T. R. Jensen, and A. Raspaud, “Planar graphs without triangles adjacent to cycles of length from 3 to 9 are 3-colorable,” Sib. Elektron. Mat. Izv. 3, 428–440, electronic only (2006; Zbl 1119.05037)]. We give a common extension of these results by proving that every planar graph in which no triangles have common edges with \( k \)-cycles, where \( k \in \{4, 5, 7\} \) (or, which is equivalent, with cycles of length 3, 5 and 7), is 3-colorable.

MSC:
05C15 Coloring of graphs and hypergraphs

Keywords:
graph; planar graph; 3-coloring

Full Text: DOI

References:
[9] O. V. Borodin, A. N. Glebov, Planar graphs without 5-cycles and with minimal distance between triangles at least 2 are 3-colourable, J. Graph Theory (in press).


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