

# Distinguishing numbers of finite 4-valent vertex-transitive graphs\*

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## Abstract

The distinguishing number of a graph  $G$  is the smallest  $k$  such that  $G$  admits a  $k$ -colouring for which the only colour-preserving automorphism of  $G$  is the identity. We determine the distinguishing number of finite 4-valent vertex-transitive graphs. We show that, apart from one infinite family and finitely many examples, they all have distinguishing number 2.

*Keywords:* Vertex colouring, symmetry breaking in graph, distinguishing number, vertex-transitive graphs.

*Math. Subj. Class.:* 05C15, 05E18

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# Razlikovalna števila končnih 4-valentnih vozliščno tranzitivnih grafov\*

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## Povzetek

Razlikovalno število  $G$  je najmanjše število  $k$ , pri katerem obstaja  $k$ -barvanje grafa  $G$  z lastnostjo, da je edini avtomorfizem grafa  $G$ , ki ohranja barve, identiteta. Določimo razlikovalno število končnih 4-valentnih vozliščno tranzitivnih grafov. Dokažemo, da imajo, razen ene neskončne družine ter še končno mnogo izjem, vsi ti grafi razlikovalno število 2.

*Ključne besede: Barvanje točk, zlom simetrije v grafu, razlikovalno število, vozliščno tranzitivni grafi.*  
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