

## RAINBOW CONNECTION NUMBER OF GRAPHS WITH DIAMETER 3

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### Abstract

A path in an edge-colored graph  $G$  is *rainbow* if no two edges of the path are colored the same. The *rainbow connection number*  $rc(G)$  of  $G$  is the smallest integer  $k$  for which there exists a  $k$ -edge-coloring of  $G$  such that every pair of distinct vertices of  $G$  is connected by a rainbow path. Let  $f(d)$  denote the minimum number such that  $rc(G) \leq f(d)$  for each bridgeless graph  $G$  with diameter  $d$ . In this paper, we shall show that  $7 \leq f(3) \leq 9$ .

**Keywords:** edge-coloring, rainbow path, rainbow connection number, diameter.

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