

Which of the following describes the graph of the equation $(x + y)^2 = x^2 + y^2$?

(A) the empty set (B) one point (C) two lines (D) a circle (E) the entire plane

2006 AMC 10 A, Problem #11—

2006 AMC 12 A, Problem #11—

“Expand $(x + y)^2$.”

Solution (C) The equation $(x + y)^2 = x^2 + y^2$ is equivalent to $x^2 + 2xy + y^2 = x^2 + y^2$, which reduces to $xy = 0$. Thus the graph of the equation consists of the two lines that are the coordinate axes.

AMC 10 Difficulty: Hard

AMC 12 Difficulty: Medium-Hard

NCTM Standard: Algebra Standard: use mathematical models to represent and understand quantitative relationships

Mathworld.com Classification: Applied Mathematics > Data Visualization > Function Graph