

Midpoint Formula (C)

A line segment is determined by its endpoints. If we know the coordinates of the endpoints of the segment then the coordinates of the midpoint of the segment are found by averaging the coordinates of the endpoints. This can be readily seen by considering similar triangles. Thus if P has coordinates (a,b,c) and Q has coordinates (x,y,z) then the midpoint of the line segment with endpoints P and Q has coordinates $((a+x)/2, (b+y)/2, (c+z)/2)$. A similar formula holds in two dimensions. For example, the midpoint of the segment with endpoints $(7,-3)$ and $(5, 13)$ has coordinates $(6, 5)$.