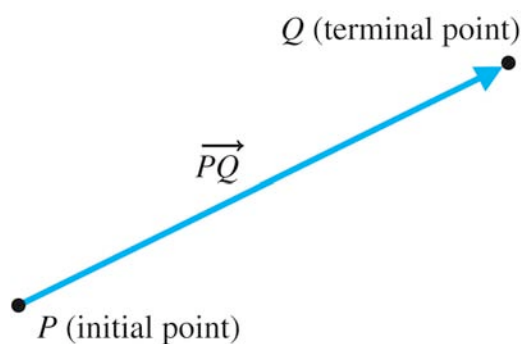


Vectors and the Geometry of Space

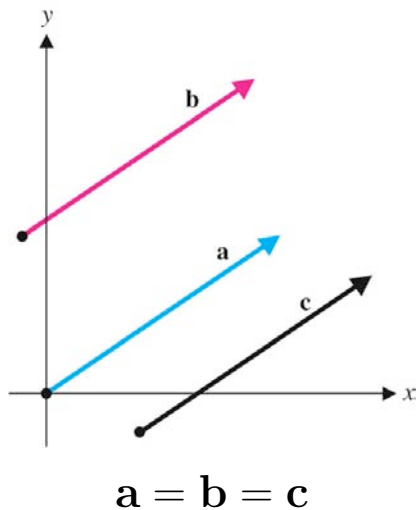
1. Vectors in the Plane



We denote the directed line segment from the point P (initial point) to the point Q (terminal point) as \vec{PQ} . The length of \vec{PQ} is its magnitude, denoted $\|\vec{PQ}\|$.

DEFINITION. A vector is the equivalence class of all directed line segments (or arrows) having the same magnitude and the same direction (an arrow and its parallel translates). Any arrow in the class may be used to name the vector.

EXAMPLE.



since \mathbf{a} , \mathbf{b} , \mathbf{c} name the same vector.