QUESTION:

Let A(1, 0), B(6, 2), C(3/2, 6) be the vertices of a triangle ABC. If P is a point inside the triangle ABC such that the triangles APC, APB and BPC have equal areas, then find the length of the line segment PQ, where Q is the point (-7/6, -1/3).

Solution:

Since point P is the centroid, so its coordinates are

= (17/6, 8/3)

and coordinates of point Q are (-7/6, -1/3)

BY using distance formula,

PQ = $\sqrt{[4^2+3^2]}$ = 5