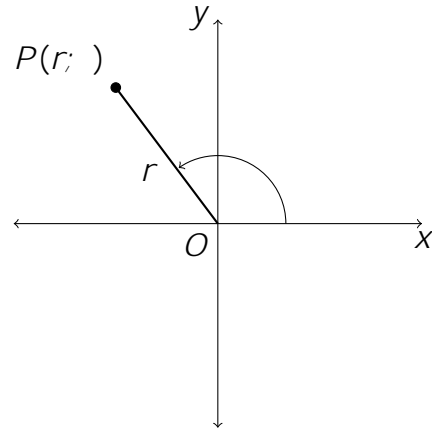**MATHEMATICS ENRICHMENT CLUB.**
Problem Sheet 11, August 6, 2018

1. Let ABC be a triangle, with AM being one of its medians. Prove that the perpendic-

Senior Questions

1. *An alternative coordinate system.* Usually, the coordinates of a point in the number plane are given using rectangular coordinates. Coordinates can also be given using a polar coordinate system.

   Suppose we have a point P lying in the number plane. The polar coordinates of P are given as $(r; \theta)$, where r is the length of the ray OP, and θ is the angle (in radians) formed between OP and positive x axis measured in the counter-clockwise direction.

   (a) Convert the following points from polar to rectangular coordinates:

   i. $\left(P\sqrt{2}; \frac{\pi}{4}\right)$ ii. $\left(1; \frac{3\pi}{2}\right)$ iii. $\left(P\sqrt{3}; \frac{5\pi}{3}\right)$