



Date:	Name:
Subject: Mathematics	Class: Secondary 3 G.S.
Time: 30 minutes	Instructor's Name: Ziad Saddy

- I. In an oriented plane consider the two right isosceles triangles IAB and JAC such that $(\overline{IB}; \overline{IA}) = \frac{\pi}{2} \pmod{2\pi}$ and $(\overline{JA}; \overline{JC}) = \frac{\pi}{2} \pmod{2\pi}$.
 Let K be the midpoint of [BC].
 Let r be the rotation of center I and angle $\frac{\pi}{2}$ and r' the rotation of center J and angle $\frac{\pi}{2}$ and let $S = r' \circ r$.
- 1) Determine S(B) and precise the nature and elements of S.
 - 2) Let $L = r'(I)$, What does K represent for the segment [IL]. Deduce that the triangle IJK is right isosceles.

- II. Consider a right isosceles triangle OAB such that $OA = OB$ and $(\overline{OA}; \overline{OB}) = \frac{\pi}{2} \pmod{2\pi}$.
 I, J and K are the midpoints of the segments [AB], [OB] and [OA] respectively.
 Let $r = r(I, \frac{\pi}{2})$ and t be the translation of vector $\frac{1}{2}\overline{AB}$, let $f = r \circ t$ and $g = t \circ r$.
- 1) a- Determine $f(K)$, $f(I)$ and $f(A)$.
 b- Precise the nature of f and determine its characteristic elements.
 - 2) a- Determine $g(J)$ and $g(O)$.
 b- Precise the nature of g and determine its characteristic elements.
 - 3) Let $h = g \circ f^{-1}$.
 a- Determine $h(O)$ and find the nature of h
 b- M being any point in the plane, let $f(M) = M_1$ and $g(M) = M_2$.
 Show that $\overline{M_1M_2}$ is equal to a fixed vector.

1 pt each
= 10 pts

GOOD WORK