Staple!

Geometry
MTG3214 03H9

Class-B

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3Sep2015

B1: Short answer. Show no work.
Please write **DNE** in a blank _if_ the described object does not exist or if the indicated operation cannot be performed.

____ a With $A := (0,1)$, $B := (2,3)$, $C := (7,1)$, let T denote $\triangle ABC$. Then OrthoCenter$(T) = ($ ______ , ______ $)$.

____ a′ The above T is the medial triangle of $\triangle PQR$, where $P=($ ______ , ______ $)$ has the most-positive x-coordinate.

____ b Triangle $\triangle EFG$ has $\text{Len}(\overline{EF}) = 7$, $\measuredangle FGE = 35°$ and $\text{Len}(\overline{GF}) = 17$. This data is consistent with [circle]

0 1 2 ∞

many triangles.

OYOP: *In grammatical English* ***sentences****, write your essays on every* ***third*** *line* (usually)*, so that I can easily write between the lines. Do* **not** *restate the question.*

In your essays, you may use the following proposition for free.

1: AAA-Prop. *For $j = 1,2$, consider triangles $\mathbf{S}_j := \triangle E_jF_jG_j$. If corresponding angles are equal* [$\measuredangle E_1F_1G_1 = \measuredangle E_2F_2G_2$, *etc.*] *then $\mathbf{S}_1$ is similar to $\mathbf{S}_2$.* ♢

B2: Consider a circle Ω and a point U o_u_tside of Ω. A ray from U intersects Ω first at a point B and then at C. Another ray from U intersects Ω at Q, then R. [See diagram on blackboard. Points B, C, Q, R are distinct.] Prove that $\triangle UBR$ is similar to $\triangle UQC$.

B3: Carefully state the *Euler-line theorem* for a triangle $\mathbf{S} := \triangle PQR$.

Write a careful *proof* the *Euler-line thm*, stating and proving any lemmas you need.

End of Class-B

B1:	___ ___	65pts
B2:	___ ___	55pts
B3:	___ ___	75pts
Total:	___ ___ ___	195pts