Eucl. Geometry MTG3214 *03H9* **Quizzes Q** 10Jan2012

Q1: Wedn. 11 Jan The **slope** of line $3[y-5]=2[x-2]$ is ______.
Point $(-4, y)$ lies on this line, where $y=$ ______.

Q2: Mon. 23 Jan Vertices $A := (8,4), B := (-6,-2), C := (-2,-2)$ form a $\triangle$ whose A-median has eqn $y = [$ ______ $\cdot x]+$ ______.
The $\triangle$'s centroid is $($ ______ , ______ $)$.

Q3: Wed. 14 Mar A triangle has orthocenter $(7,2)$ and circumcenter $(1,20)$. So Centroid=$($ ______ , ______ $)$.
[*Hint:* Was given on π Day, March 14]

Q4: Fri. 16 Mar With $\mathsf{d}(\cdot,\cdot)$ the usual metric on the plane, use $\text{Ball}_r(Q)$ for the radius-r (open) ball centered at a point $Q \in \mathbb{R}^2$. The ***interior*** of a subset $S \subset \mathbb{R}^2$ was defined as
$\{P \in$ ______ $|$ ______ $\}$.

Q5: Wed. 21 Mar With $\mathsf{d}(\cdot,\cdot)$ the usual metric on the plane, use $\text{Ball}_\rho(S)$ for the radius-ρ (open) ball centered at a point $S \in \mathbb{R}^2$. The ***boundary*** of a subset $\Omega \subset \mathbb{R}^2$ was defined as
$\{Q \in$ ______ $|$ ______ $\}$.

One possible answer is:

$$\left\{Q \in \mathbb{R}^2 \;\middle|\; \begin{array}{l}\forall r>0, \text{ intersections } \text{Ball}_r(Q)\cap\Omega \text{ and} \\ \text{Ball}_r(Q)\cap[\mathbb{R}^2 \smallsetminus \Omega] \text{ are non-empty}\end{array}\right\}.$$

An alternative to word "non-empty" is:
$\text{Ball}_r(Q)\cap\Omega \neq \varnothing$, etc.

Q6: Wed. 28 Mar With respect to $\mathbf{C}$, the circle $[x-2]^2+y^2=17$, and the $Q := (3,3)$ point, $\text{Power}_{\mathbf{C}}(Q)=$ ______.

Distinct points $X, Y \in \mathbf{C}$ are colinear with Q, and $\text{Dist}(Q,X)=2$. So $\text{Dist}(Q,Y)=$ ______.

Q7: Wed. 11 Apr *Am I in class today?*

circle one *"Yes!"* *"Of course!"*

Q8: Fri. 20 Apr Affine map $\mathsf{G} := \begin{bmatrix} \mathsf{M} & \mathsf{T} \\ 0\ 0 & 1\end{bmatrix}$ takes $A := \begin{bmatrix}5\\4\end{bmatrix} \to P := \begin{bmatrix}1\\0\end{bmatrix}$, $B := \begin{bmatrix}7\\4\end{bmatrix} \to Q := \begin{bmatrix}0\\0\end{bmatrix}$, and $C := \begin{bmatrix}5\\8\end{bmatrix} \to R := \begin{bmatrix}0\\1\end{bmatrix}$. Hence

$\mathsf{M} = \begin{bmatrix} \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ \end{bmatrix}$ and $\mathsf{T} = \begin{bmatrix} \_\_\_ \\ \_\_\_ \end{bmatrix}$.

Q9: Mnd. 16 Apr ? *Solve all of the World's Problems.*