## Use of the grids is optional for solving the following problems.




1. What is the image of point $A(4,2)$ after the composition of transformations defined by $R_{90^{\circ}} \circ r_{y=x}$ ?
(1) $(-4,2)$
(2) $(4,-2)$
(3) $(-4,-2)$
(4) $(2,-4)$
2. What is the image of point $(1,1)$ under $r_{y-a x i s} \circ \mathrm{R}_{-90^{\circ}}$ ?
(1) $(1,1)$
(2) $(1,-1)$
(3) $(-1,1)$
(4) $(-1,-1)$
3. The coordinates of $J$ RB are $J(1,-2), R(-3,6)$, and $B(4,5)$. What are the coordinates of the vertices of its image after the transformation $T_{2,-1} \circ r_{y \text {-axis }}$ ?
(1) $(3,1),(-1,-7),(6,-6)$
(3) $(1,-3),(5,5),(-2,4)$
(2) $(3,-3),(-1,5),(6,4)$
(4) $(-1,-2),(3,6),(-4,5)$
4. If the coordinates of point $P$ are $(2,-3)$, then $\left(R_{90^{\circ}} \circ R_{-180^{\circ}}\right)(P)$ is:
(1) $(-2,3)$
(2) $(-2,-3)$
(3) $(3,-2)$
(4) $(-3,-2)$
5. Find the coordinates of $\left(r_{y=3} \circ r_{y=-x}\right)(A)$ if the coordinates of $A$ are $(6,1)$.
6. Find the coordinates of the pre-image of $(2,4)$ under the transformation $r_{y-a x i s} \circ T_{3,-5}$.
7. What is the image that results from this composition of transformations? $r_{x=-2} \circ R_{90^{\circ}}(-3,0)$
8. Find the coordinates of the pre-image of $N^{\prime}(-1,3)$ under the composite $r_{y=4} \circ R_{270^{\circ}}$.
9. Which transformation is equivalent to the composite line reflections $r_{y-a x i s} \circ r_{y=x}(A B)$ ?
(1) a rotation
(3) a translation
(2) a dilation
(4) a glide reflection
10. Write a single translation that is equivalent to $\mathrm{T}_{3,-1}$ followed by $\mathrm{T}_{-5,5}$.
