

Unit 1: Rigid Transformations and Congruence

ADVANCED · SET 2

Name: _____ Date: _____

Show all your work. Give each answer as an exact value — a coordinate pair like $(3, -4)$, a whole number, or "yes"/"no". Use the standard convention that all rotations are about the origin $(0, 0)$ unless stated otherwise.

1. Point A $(-6, 4)$ is first translated by the vector $(5, -9)$, and the resulting image is then rotated 180° about the origin. Give the coordinates of the final image point.

Answer: _____

3. Point C $(-8, 5)$ is rotated 90° clockwise about the origin. Give the coordinates of the image point.

Answer: _____

5. Point E $(-9, 13)$ is reflected across the line $y = x$. Give the coordinates of the image point.

Answer: _____

7. A single translation maps point A $(-3, 7)$ onto A' $(9, -2)$. Under that same translation, find the image of point B $(5, -1)$. Give the coordinates.

Answer: _____

9. Point H $(5, -2)$ is reflected across the y-axis to produce image point H'. How many units long is segment HH' (the distance between H and its image)?

Answer: _____

2. Point B $(7, -3)$ is reflected across the y-axis, then that image is reflected across the x-axis, and finally that image is translated by the vector $(-4, 6)$. Give the coordinates of the final image point.

Answer: _____

4. Point D $(11, -6)$ is rotated 90° counterclockwise about the origin. Give the coordinates of the image point.

Answer: _____

6. Point F $(-4, -10)$ is rotated 270° counterclockwise about the origin. Give the coordinates of the image point.

Answer: _____

8. Point G $(6, -8)$ is reflected across the x-axis, and the resulting image is then rotated 180° about the origin. Give the coordinates of the final image point.

Answer: _____

10. Point J $(2, 2)$ is translated by the vector $(-7, 4)$, and the resulting image is then translated by the vector $(10, -11)$. Give the coordinates of the final image point.

Answer: _____

11. Point K(-13, 9) is rotated 180° about the origin, and the resulting image is then reflected across the y-axis. Give the coordinates of the final image point.

Answer: _____

12. Point L(11, -6) is rotated 90° counterclockwise about the origin, and point M(6, 11) is the image. A rigid transformation preserves distance from the origin. What is the value of $x^2 + y^2$ for point L (which must equal it for point M)?

Answer: _____