9.5 Apply Compositions of Transformations

Glide Reflection: a transformation in which every point P is mapped onto P" by:
1) A translation mapping P onto P'
2) A reflection in a line k parallel to the direction of the translation that maps P' onto P"

Ex 1  The vertices of ∆ABC are A(3, 2), B(5, 3), and C(6, 1).
Find the image of ∆ABC after the glide reflection.

Translation: (x, y) → (x - 8, y)
Reflection: in the x-axis

Guided Practice
1. Suppose ∆ABC in Ex 1 is translated 4 units down, then reflected in the y-axis. What are the coordinates of the vertices of the image?

2. In Ex 1, describe a glide reflection from ∆A''B''C'' to ∆ABC.
composition: a transformation that results from combining two or more transformations

Thm 9.4 Composition Theorem
The composition of two or more isometries is an isometry.

Ex 2 Sketch the image of \( \triangle QRS \) after a glide reflection. \( Q(2, -3), \) \( R(4, -4), S(5, -1) \)
translation: \((x, y) \rightarrow (x, y+5)\)
reflection: in the y-axis

EX 3 Sketch the image of CD after the composition:
\( C(2, 0) \)  \( D(3, 3) \)
reflection: in the x-axis
rotation: 270\(^\circ\) counterclockwise about the origin

Homework
Pages 611 – 615  # 1, 2, 4–6, 8–24 even, 27–33