Math 3210 Fall 2009

GeoGebra Worksheet on Geometric Transformations

Open the GeoGebra program. In the View menu click on Grid and you should see grid lines in the drawing pane on the right. When you are finished with a problem, go to the Edit menu, click on Select All and then click on Erase to clear the screen for the next problem.

I. **a) Introduce points with coordinates (2,1), (5,2) and (4,5). Find the coordinates of a fourth point so that these four point are the vertices of a square. (___ , ____). Call this square "J".**

b) Reflect square J in the x-axis to obtain square "K".

c) Rotate square K around the origin by 90º counter-clockwise to obtain square "L".

d) The single motion that maps J to L (i.e., composition of b) and c)) is a (direct or opposite)_____ motion and so is either a _____ or a _____.

e) Translate square L by the vector (1,5) to obtain square "M".

f) The single motion that maps J to M (i.e., composition of b) ,c) and e)) is a (direct or opposite)_____ motion and so is either a _____ or a _____.

g) Determine which type of motion it is. _____

h) Find the equations for a single motion that maps square M to square J.

x' = _____
y' = _____ .

II. **a) Use the square J of question I a) above.**

b) Reflect square J in the y-axis to obtain square "K".

c) Apply the glide reflection which consists of the reflection about the line y = x followed the translation by the vector (2,2) to obtain square "L".

d) The single motion that maps J to L (i.e., composition of b) and c)) is a (direct or opposite)_____ motion and so is either a _____ or a _____.

e) Translate square L by the vector (1,5) to obtain square "M".

f) The single motion that maps J to M (i.e., composition of b) ,c) and e)) is a

(direct or opposite)_____ motion and so is either a _____ or a _____.

g) Determine which type of motion it is. _____

h) Find the equations for a single motion that maps square M to square J.

x' = _____

y' = _____ .

III. a) Use the square J of question I a) above.

b) Rotate square J by 90º clockwise about the origin to obtain square "K".

c) Translate square K by the vector (2,2) to obtain square "L".

d) The single motion that maps J to L (i.e., composition of b) and c)) is a (direct or opposite)_____ motion and so is either a _____ or a _____.

e) Rotate square L by 45º about the point (1,1) to obtain square "M".

f) The single motion that maps J to M (i.e., composition of b) ,c) and e)) is a (direct or opposite)_____ motion and so is either a _____ or a _____.

g) Determine which type of motion it is. _____

h) Find the equations for a single motion that maps square M to square J.

x' = _____

y' = _____ .