Products: Question 17

Ana Bhattacharjee

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The first step is to find the ratio of the sides from square EFGH to E"F"G"H".

$$H"(-9,-6), G"(-3,-6), E"(-9,-12), F"(-3,-12) \tag{1}$$

$$E(-6,3), F(-2,3), H(-6,-1), G(-2,-1) \tag{2}$$

$$EF = \sqrt{(-2+6)^2 + (3-3)^2} = 4 \tag{3}$$

$$E"F" = \sqrt{(-3+9)^2 - (-12+12)^2} = 6 \tag{4}$$

$$k = \frac{6}{4} = \frac{3}{2} \tag{5}$$

$$\tag{6}$$

The next step is to use the reciprocol of the scale factor (k^{-1}) and multiply this reciprocol to each coordinate of the final transformation. The rationale for this is to find out the placement of E'F'G'H' before it was dilated.

$$H'(\frac{2}{3}(-9,-6)) \to (-6,-4) \tag{7}$$

$$G'(\frac{2}{3}(-3,-6)) \to (-2,-4) \tag{8}$$

$$E'(\frac{2}{3}(-9,-12)) \to (-6,-8) \tag{9}$$

$$F'(\frac{2}{3}(-3,-12)) \to (-2,-8) \tag{10}$$

From these coordinates, a visualization of the square can immediately demonstrate that it has been vertically translated 3 units down from the original square EFGH. See the image below.

Figure 1: Series of Transformations of EFGH