Problem 1 – Reflecting the Exponential Function

On page 1.3, reflect the point at (0, 1) over the line. To do this, select **MENU > Transformation > Reflection**, then select the point, followed by the line $y = x$.

Use the **Coordinates and Equations** tool (**MENU > Actions > Coordinates and Equations**) to get the coordinates of the reflected point. Record the new point in the table below.

Change the value of the point at (0, 1) by changing the *x*-value. Double-click on the *x*-value and type in the new values from the first column of the table below. Complete the remaining three columns of the table.

Original *x*-value	Original *y*-value	Reflected *x*-value	Reflected *y*-value
–2			
–1			
0	1		
1			
2			
3			

- What do you notice about the original values and reflected values in each row of the table?

Next, find the locus of the reflected points using the **Locus** tool (**MENU > Construction > Locus**). Select the original point, then the reflected point.

- What do your results from the table mean when trying to figure out the equation for the inverse function?

Find the inverse of $y = e^x$. Switch *x* and *y* in the equation and solve for *y*. Check your result by going back to page 1.3 and graphing this result to see if it matches the locus graph.

- The inverse of $y = e^x$ is: _____

Extension – Reflecting Any Exponential Function

Repeat the process of the activity for the function given on page 2.2. Change the value of the base *b*, to find different inverse functions for the different exponential functions.