Unit 1 Assignment – Transformations and Graphing

1. Select any one of the six base functions.

   e.g., $y = 2^x$

2. Incorporate at least 4 transformations into the equation.

   e.g., $y = \frac{-1}{2} \bullet 2^{x-4} + 3$

3. Describe, in words and in the correct order, the transformations. [4 marks]

   e.g., The transformations are:
   -vertical reflection over the X-axis
   -vertical compression by a factor of 0.5
   -horizontal translation right 4 units
   -vertical translation up 3 units

4. Use mapping notation to determine at least 4 points on the transformed function. If applicable, transform the asymptote(s). [6 marks]

   e.g., $(x, y) \rightarrow (x + 4, -0.5y + 3)$
   $(-1, 0.5) \rightarrow (3, 2.75)$
   $(0, 1) \rightarrow (4, 2.5)$
   $(1, 2) \rightarrow (5, 2)$
   $(2, 4) \rightarrow (6, 1)$
   $(3, 8) \rightarrow (7, -1)$
   Asymptote: $y = 0 \rightarrow$ New asymptote: $y = 3$

5. Graph the original function and the transformed function on the same graph. You may do this by hand or using Desmos. Label 4 points on the base function, 4 points on the transformed function, and draw any asymptotes. [5 marks]

   e.g.,