MCR3UI - Unit 5 Day 4

Transformation of Exponential Functions:
Stretches, Compressions Combinations

Practice Questions

1. Describe the transformations that maps the function $y = 8^x$ onto each function given.
   (a) $y = \left(\frac{1}{2}\right) 8^x$
   (b) $y = 8^{4x}$
   (c) $y = -8^x$
   (d) $y = 8^{-2x}$
2. Sketch the graph of each function in question 1. Use the graph of $y = 8^x$ as the base.
3. Write the equation for the function that results from each transformation applied to the base function $y = 7^x$
   (a) reflect in the x-axis
   (b) stretch vertically by a factor of 3
   (c) stretch horizontally by a factor of 2.4
   (d) reflect in the y-axis and compress vertically by a factor of 7
4. Describe the transformations and sketch the graph of $y = \left(-\frac{1}{2}\right) 2^{x-4}$ by using $y = 2^x$ as the base and applying transformations.
5. Describe the transformations and sketch the graph of $y = 3^{-0.5x-1} - 5$ by using $y = 3^x$ as the base and applying transformations.
6. (a) Graph the function $f(x) = \left(\frac{1}{2}\right)^{\frac{1}{2}(x+3)} - 1$ using transformations.
   (b) Identify the following properties.
      (i) domain
      (ii) range
      (iii) equation of the asymptote