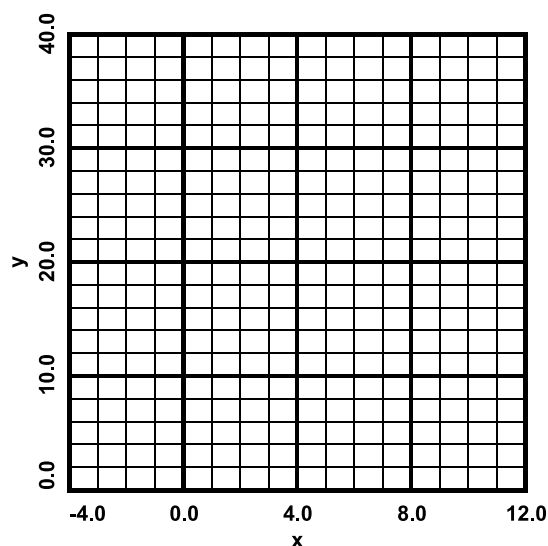


- 1) Consider the functions $y = f(x) = 2^x$,
 $y = g(x) = 2^{x-3}$ and $y = h(x) = 2^{x+3}$.
- State the translation that takes $y = f(x)$ to $y = g(x)$.
 - State the translation that takes $y = f(x)$ to $y = h(x)$.
 - Write $y = g(x)$ as a vertical compression of $y = f(x)$. Explain the transformation in words.
 - Write $y = h(x)$ as a vertical stretch of $y = f(x)$. Explain the transformation in words.
 - On the axes below, graph $y = f(x)$, $y = g(x)$ and $y = h(x)$. On the graph, indicate the translations, compression and stretch of $y = f(x)$.



- 2) Let $y = f(x) = 4^x$.

- Write $y = g(x) = 16^x$ as a horizontal compression of $y = f(x)$. Explain the transformation of $y = f(x)$ to $y = g(x)$ in words.
- Write $y = h(x) = 2^x$ as a horizontal stretch of $y = f(x)$. Explain the transformation of $y = f(x)$ to $y = h(x)$ in words.