Function Arithmetic Assignment

Complete these problems as directed in the video. Be prepared to explain your answers in class to your group or ask a question if you are unable to answer a question.

\[ f(x) = \frac{3 - 11x}{7}, \quad g(x) = \frac{x^3 - 7}{5}. \]

1. Calculate the inverse function, \( f^{-1}(x) \), of \( f(x) \).
2. Calculate \( f(f^{-1}(x)) \) and \( f^{-1}(f(x)) \).
3. Calculate the inverse function, \( g^{-1}(x) \), of \( g(x) \).
4. Calculate \( g(g^{-1}(x)) \) and \( g^{-1}(g(x)) \).
5. Why are the results of the four composition problems all the same?