3. [8 points] You do not need to show any work for this problem.

a. [2 points] Which of the following functions dominates all the others as \( x \to \infty \)? Circle exactly one of the options below.

\[
\begin{align*}
  f(x) &= 0.01(1.3)^x \\
  g(x) &= 100x^{10} \\
  h(x) &= 300(0.25)^x \\
  i(x) &= 4^{-2x} \\
  j(x) &= 300 \ln(4|x|) \\
  k(x) &= 100 \left( \frac{6}{5} \right)^x
\end{align*}
\]

b. [2 points] Which of the following functions dominates all the others as \( x \to -\infty \)? Circle exactly one of the options below.

\[
\begin{align*}
  f(x) &= 0.01(1.3)^x \\
  g(x) &= 100x^{10} \\
  h(x) &= 300(0.25)^x \\
  i(x) &= 4^{-2x} \\
  j(x) &= 300 \ln(4|x|) \\
  k(x) &= 100 \left( \frac{6}{5} \right)^x
\end{align*}
\]

c. [2 points] Let \( f(x) \) be an odd function with:

\[
\lim_{x \to -3^+} f(x) = -\infty \quad \text{and} \quad \lim_{x \to -3^-} f(x) = \infty
\]

Suppose that \( f(3) = 0 \). Evaluate \( \lim_{x \to 3^-} f(x) \). Write your answer in the space provided. If there is not enough information to evaluate the limit, write NOT ENOUGH INFORMATION.

\[
\lim_{x \to 3^-} f(x) = \infty
\]

d. [2 points] Consider the functions:

\[
\begin{align*}
  f(x) &= 1 + \sqrt{1 + x} \\
  g(x) &= 1 + x
\end{align*}
\]

Find the formula of a function \( h(x) \) for which \( f(x) = g(h(x)) \). Write your answer in the space provided.

\[
h(x) = \sqrt{1 + x}
\]