Example

Given the one-to-one function \( f(x) = x^3 + 12 \), find \( f^{-1}(x) \).

**ANSWER:**

Step 1: Replace \( f(x) \) with \( y \).

\[
y = x^3 + 12
\]

Step 2: Swap \( x \) and \( y \).

\[
x = y^3 + 12
\]

Step 3: Solve for \( y \).

\[
x = y^3 + 12
\]

\[
x - 12 = y^3
\]

\[
(x - 12)^{1/3} = y
\]

\[
y = \sqrt[3]{x - 12}
\]

Step 4: Replace \( y \) with \( f^{-1}(x) \).

\[
f^{-1}(x) = \sqrt[3]{x - 12}
\]

Cube roots must be entered in WeBWorK as fractional exponents. If this were your problem in WeBWorK then you would enter your answer **exactly** as shown here: \((x-12)^{(1/3)}\)