Week 2 Math 1508 Worksheet #2

Problem 2[sec 1.4]:

State the domain of each function then explain in two or more sentences why the domains of each pair are different.

a. \( f(x) = \sqrt{12x + 4} \) and \( g(x) = \frac{1}{\sqrt{12x + 4}} \)

b. \( f(x) = \sqrt{x - 8} \) and \( g(x) = 3\sqrt{x - 8} \)

Problem 2 [sec 1.5]:

Find the zeros of the functions

a. \( f(x) = \frac{x^2 - 5x - 24}{3x - 6} \)

b. \( f(x) = x^3 - 64x \)

Problem 3 [sec 1.5]:

True or False [You must justify your answer with an explanation. At least three sentences]

a. A function with a square root cannot have a domain that is the set of all real numbers.

b. It is possible for an odd function to have the interval \([0, \infty)\) as its domain.
Problem 4 [sec 1.6]:

Sketch the graph of the piece wise function then give its domain.

BONUS QUESTION: State the range of the function.

\[ h(x) = \begin{cases} 
\frac{1}{x + 2} & x < -2 \\
\sqrt{2 + x} & -2 \leq x \leq 0 \\
x^2 + 2 & x > 0 
\end{cases} \]