Week 3 Math 1508 Worksheet #2

Problem 1 [sec 1.7 – sec 1.9]:

True or False [You must justify your answer with an explanation.]

a. The graph of \( y = f(-x) \) is a reflection of the graph of \( y = f(x) \) about the \( x \)-axis.

b. The graph of \( f(x) = |x| + 6 \) and \( f(x) = |-x| + 6 \) are identical.

c. If \( f \) is an even function, then \( f^{-1} \) exists.

d. If the inverse function of \( f \) exists and the graph of \( f \) has a \( y \)-intercept, then the \( y \)-intercept of \( f \) is an \( x \)-intercept of \( f^{-1} \).

Problem 2 [sec 1.8]:

Find two functions \( f \) and \( g \) such that \( (f \circ g)(x) = h(x) \).

a. \( h(x) = \frac{1}{(5x-9)^2} \)

b. \( f(x) = \sqrt{3x^2 - 5x + 3} \)

Problem 3 [sec 1.7 – 1.9]

Find the domain for the following functions.

a. \( f(x) = \frac{1}{7-2x} \)

b. \( f(x) = \sqrt{8x + 24} \)

c. \( f(x) = |5x - 8| \)

d. \( f(x) = 3x^2 + 13x - 56 \)

e. \( f(x) = \frac{1}{\sqrt{5x+15}} \)
Problem 4 [sec 1.9]:

For the function \( f(x) = \frac{2x+9}{3x-5} \)

a. Find the inverse function of \( f \).

b. Graph both \( f \) and \( f^{-1} \) on the same set of coordinate axes.

c. State the domains and ranges of \( f \) and \( f^{-1} \).