1. Evaluate each expression using the graph above.

(a) \((f + g)(2) = \) ______  
(f) Does \(f(x)\) have an inverse for all \(x\)?  Y   N

(b) \((fg)(2) = \) ______  
(g) Does \(g(x)\) have an inverse for all \(x\)?  Y   N

(c) \((g \circ f)(3) = \) ______

(d) \((f \circ g \circ f)(3) = \) ______

2. You want to fence off a rectangular garden adjacent to a barn (with no fence along the barn). Find the area of the largest garden possible with 100 ft of fencing.

\[ \text{Area} = \] ______
3. If \( f(x) = x^2 - 7 \) and \( g(x) = \sqrt{x + 3} \), find the following.

(a) \( f \circ g \)

(b) \( g \circ f \)

(c) \( g(f(2)) \)

4. Find the inverse of \( f(x) = \sqrt{7 - 4x} \). \( f^{-1}(x) = \) __________

5. Find the inverse of \( f(x) = \ln(x/2) \). \( f^{-1}(x) = \) __________

6. Evaluate the following expressions.

(a) \( \log_2 80 - \log_2 5 \)

(b) \( \log_4 8 \)

(c) \( \ln \frac{e^2}{\sqrt{e}} \)

7. Combine into a single logarithm: \( \ln(5x) - 3 \ln(x^2 + 1) + \frac{1}{2} \ln(5x - 3) \)
8. If \( \ln a = 7, \ln b = -4, \ln c = 8 \), evaluate the following expressions.

(a) \( \ln \frac{a^5}{b^2 c^3} \)

(b) \( \ln(a \sqrt{bc}) \)

(c) \( \ln \left( \frac{a}{e} \right) \)

9. Solve the following equations.

(a) \( 4^{x+2} = 6^{5x} \)

(b) \( \log_4(12 + 2x) = 3 \)

(c) \( 5 \ln(4 - x) = 3 \)
10. Suppose $4,000 is invested in an account paying 6.5% interest per year (APR).
   (a) Find the amount in the account after 7 years if interest is compounded monthly.

   (b) How long will it take for the account to have $8,000 if interest is compounded semiannually?

   (c) Find the amount in the account after 7 years if interest is compounded continuously.

   (d) How long will it take for the account to have $8,000 if interest is compounded continuously?