1. Evaluate each expression using the graph above.

   (a) \((f + g)(3) = \) ____

   (b) \((fg)(1) = \) ____

   (c) \((g \circ f)(4) = \) ____

   (d) \((f \circ g \circ f)(4) = \) ____

   (f) Does \(f(x)\) have an inverse for all \(x\)?  Y  N

   (g) Does \(g(x)\) have an inverse for all \(x\)?  Y  N

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 80 ft of fencing.

   Area = _______
3. If \( f(x) = x^2 - 8 \) and \( g(x) = \sqrt{x + 5} \), find the following.

(a) \( f \circ g \)

(b) \( g \circ f \)

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

4. Find the inverse of \( f(x) = \sqrt{5 - 3x} \).  
\[ f^{-1}(x) = \] 

5. Find the inverse of \( f(x) = \ln(x/3) \).  
\[ f^{-1}(x) = \]

6. Evaluate the following expressions.

(a) \( \log_4 80 - \log_4 5 \)

(b) \( \log_8 4 \)

(c) \( \ln \frac{e^3}{\sqrt{e}} \)

7. Combine into a single logarithm: \( \ln(5x) + 3 \ln(x^2 + 1) - \frac{1}{2} \ln(3x - 1) \)
8. If \( \ln a = 4 \), \( \ln b = -8 \), \( \ln c = 6 \), evaluate the following expressions.

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

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

(c) \( \ln (a/e) \)

9. Solve the following equations.

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

(b) \( \log_3(11 + 2x) = 4 \)

(c) \( 4 \ln(6 - x) = 3 \)
10. Suppose $5,000 is invested in an account paying 4.5% interest per year (APR).

(a) Find the amount in the account after 6 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 6 years if interest is compounded continuously.

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