6.6 Practice

In Exercises 1–3, find the inverse of the function. Then graph the function and its inverse.

1. \( f(x) = 2x + 3 \)  
2. \( f(x) = \frac{1}{3}x - 2 \)  
3. \( f(x) = 4x \)

4. Determine whether each pair of functions \( f \) and \( g \) are inverses. Explain your reasoning.

   a. \[
   \begin{array}{c|cccc}
   x & -2 & -1 & 0 & 1 \\
   \hline
   f(x) & -3 & 3 & 9 & 15 \\
   \end{array}
   \]

   b. \[
   \begin{array}{c|cccc}
   x & 1 & 2 & 3 & 4 & 5 \\
   \hline
   f(x) & 9 & 7 & 5 & 3 & 1 \\
   \end{array}
   \]

In Exercises 5–6, find the inverse of the function. Then graph the function and its inverse.

5. \( f(x) = 9x^2, \ x \geq 0 \)

6. \( f(x) = 16x^2, \ x \leq 0 \)
In Exercises 7 and 8, use the graph to determine whether the inverse of \( f \) is a function. Explain your reasoning.

7.  

8.  

In Exercises 9–11, find the inverse of the function. Then graph the function and its inverse.

9.  \( f(x) = -3x + 4 \)

10.  \( f(x) = -\frac{1}{3}x + 1 \)

11.  \( f(x) = -9x^2, \ x \leq 0 \)

12.  Describe and correct the error in finding the inverse function.

\[
\begin{align*}
\times 
\quad f(x) &= 3x - 8 \\
\quad y &= 3x - 8 \\
\quad x &= 3y - 8 \\
\quad f^{-1}(x) &= 3x - 8
\end{align*}
\]

13.  The area of a circle is given by \( A = \pi r^2 \) where \( r \) is the radius.

a.  Find the inverse function. Describe what it represents.

b.  Find the radius of a circle with an area of \( 64\pi \) square meters.