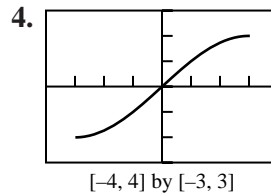
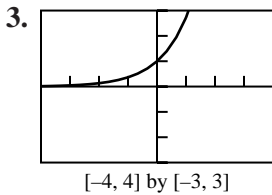
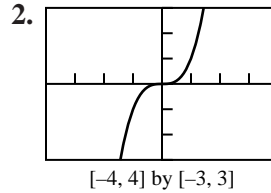
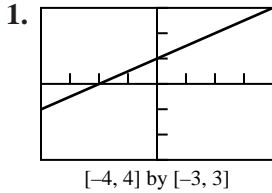
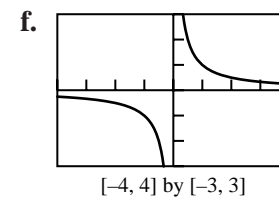
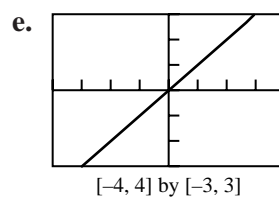
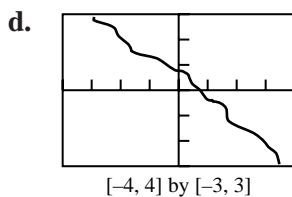
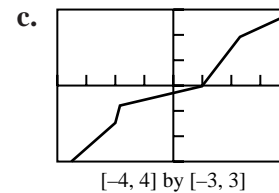
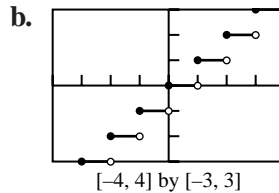
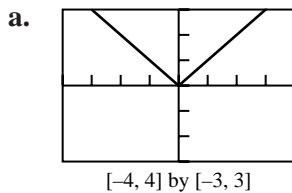


3.8 Concepts Worksheet**Inverse Functions**

Given the graph $f(x)$, roughly sketch $f^{-1}(x)$ on the same grid.



5. Which of the following have inverse functions?



6. Which of the functions in Problem 5 appear to have an inverse function whose graph is the same as the original graph?

Continued

Concept Connectors

- If $f(g(x)) = g(f(x)) = x$, what is the relationship between functions f and g ? _____
- Use implicit differentiation to find an expression for $g'(x)$ using $f(g(x)) = x$, assuming both f and g are differentiable.

Let f be a differentiable function with the $f(x)$ and $f'(x)$ values given in the table below. Assume that f has a differentiable inverse function, $g(x) = f^{-1}(x)$.

| x | $f(x)$ | $f'(x)$ |
|-----|--------|---------|
| 1 | -3 | 4 |
| 2 | 1 | 5 |
| 3 | 2 | 6 |

- Complete the table to give as much information as possible about the inverse function.

| x | $g(x)$ | $g'(x)$ |
|-----|--------|---------|
| | | |
| | | |
| | | |

- Find an equation of the line tangent to the graph of $y = f(x)$ at $x = 1$.

- Find an equation of the line tangent to the graph of $y = g(x)$ at $x = 1$.

- Find an equation of the line normal to the graph of $y = g(x)$ at $x = 2$.
