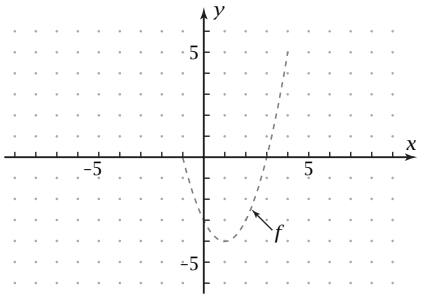
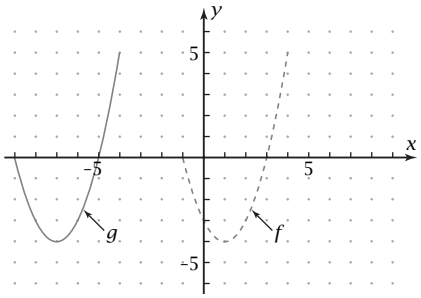
Part 2: Graphing calculators allowed (9–21)

9. The graph shows $f(x) = x^2 - 2x - 3$ plotted in the domain $-1 \le x \le 4$. Plot this graph using a friendly window. Divide by the Boolean variable ($x \ge -1$ and $x \le 4$) to get the domain shown. Check your graph with your instructor.

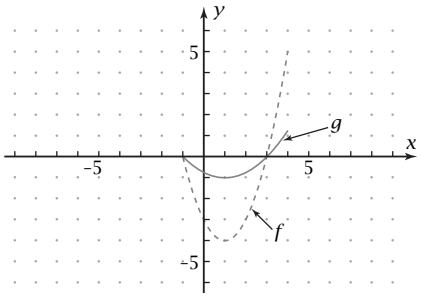


For Problems 10–14, identify the transformation of the graph of f (dashed) to get the graph of g (solid). Plot the graph of g on your grapher and state whether it checks.

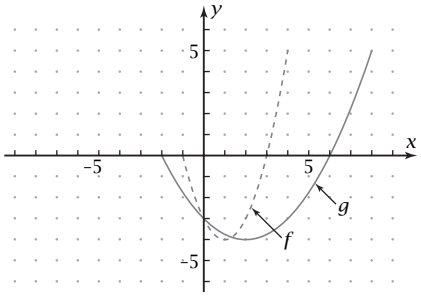
10.



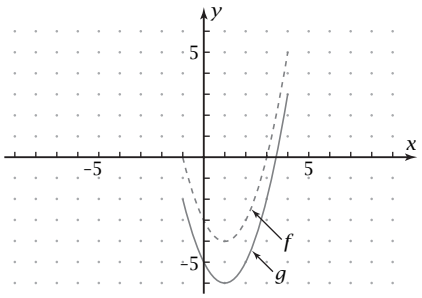
11.



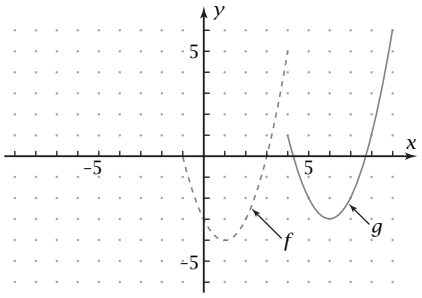
12.



13.



14.



Shopping Cart Problem: For Problems 15–20: The shopping carts at a grocery store are each 52 in. long. A line of 6 carts pushed together has a total length of 109 in.

15. Make a sketch showing what the line of 6 carts would look like.

16. How many inches are added to the line for each cart? Show how you get your answer.

17. Let $f(n)$ be the length in inches for a line of n carts. Write an equation for $f(n)$ in terms of n.

18. What kind of function did you write in Problem 17?

19. Based on your equation in Problem 17, how long would a line of 15 carts be?

20. The store has a space exactly 20 ft long (240 in.) in which to put lines of carts. What is the greatest number of carts they can put in a line without exceeding the 240 in.? Show how you get your answer.

21. What did you learn as a result of taking this test that you did not know before?