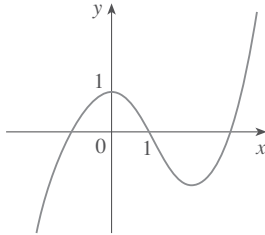
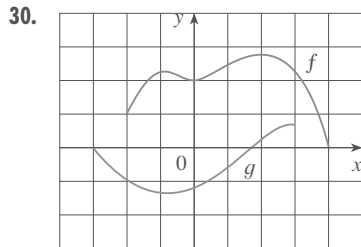
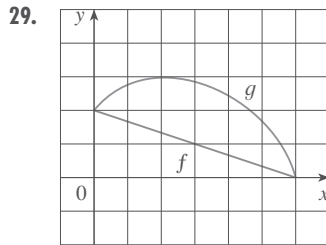


27. (a) How is the graph of $y = f(|x|)$ related to the graph of f ?
 (b) Sketch the graph of $y = \sin |x|$.
 (c) Sketch the graph of $y = \sqrt{|x|}$.
28. Use the given graph of f to sketch the graph of $y = 1/f(x)$. Which features of f are the most important in sketching $y = 1/f(x)$? Explain how they are used.



29–30 ||| Use graphical addition to sketch the graph of $f + g$.



31–32 ||| Find $f + g$, $f - g$, fg , and f/g and state their domains.

31. $f(x) = x^3 + 2x^2$, $g(x) = 3x^2 - 1$

32. $f(x) = \sqrt{1+x}$, $g(x) = \sqrt{1-x}$

33–34 ||| Use the graphs of f and g and the method of graphical addition to sketch the graph of $f + g$.

33. $f(x) = x$, $g(x) = 1/x$ 34. $f(x) = x^3$, $g(x) = -x^2$

35–40 ||| Find the functions $f \circ g$, $g \circ f$, $f \circ f$, and $g \circ g$ and their domains.

35. $f(x) = 2x^2 - x$, $g(x) = 3x + 2$

36. $f(x) = 1 - x^3$, $g(x) = 1/x$

37. $f(x) = \sin x$, $g(x) = 1 - \sqrt{x}$

38. $f(x) = 1 - 3x$, $g(x) = 5x^2 + 3x + 2$

39. $f(x) = x + \frac{1}{x}$, $g(x) = \frac{x+1}{x+2}$

40. $f(x) = \sqrt{2x+3}$, $g(x) = x^2 + 1$

41–44 ||| Find $f \circ g \circ h$.

41. $f(x) = x + 1$, $g(x) = 2x$, $h(x) = x - 1$

42. $f(x) = 2x - 1$, $g(x) = x^2$, $h(x) = 1 - x$

43. $f(x) = \sqrt{x-1}$, $g(x) = x^2 + 2$, $h(x) = x + 3$

44. $f(x) = \frac{2}{x+1}$, $g(x) = \cos x$, $h(x) = \sqrt{x+3}$

45–50 ||| Express the function in the form $f \circ g$.

45. $F(x) = (x^2 + 1)^{10}$ 46. $F(x) = \sin(\sqrt{x})$

47. $G(x) = \frac{x^2}{x^2 + 4}$ 48. $G(x) = \frac{1}{x+3}$

49. $u(t) = \sqrt{\cos t}$ 50. $u(t) = \frac{\tan t}{1 + \tan t}$

51–53 ||| Express the function in the form $f \circ g \circ h$.

51. $H(x) = 1 - 3x^2$ 52. $H(x) = \sqrt[3]{\sqrt{x} - 1}$

53. $H(x) = \sec^4(\sqrt{x})$

54. Use the table to evaluate each expression.

- (a) $f(g(1))$ (b) $g(f(1))$ (c) $f(f(1))$
 (d) $g(g(1))$ (e) $(g \circ f)(3)$ (f) $(f \circ g)(6)$

x	1	2	3	4	5	6
$f(x)$	3	1	4	2	2	5
$g(x)$	6	3	2	1	2	3

55. Use the given graphs of f and g to evaluate each expression, or explain why it is undefined.

- (a) $f(g(2))$ (b) $g(f(0))$ (c) $(f \circ g)(0)$
 (d) $(g \circ f)(6)$ (e) $(g \circ g)(-2)$ (f) $(f \circ f)(4)$

