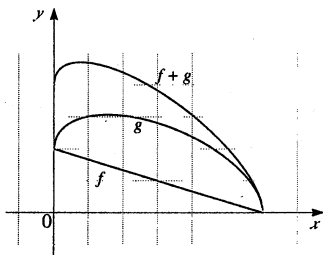


11.



17. (a)  $f(g(0)) = f(2 - (0)^2) = f(2) = 3(2) - 5 = 1$   
 (b)  $g(f(0)) = g(3(0) - 5) = g(-5) = 2 - (-5)^2 = -23$
19. (a)  $(f \circ g)(-2) = f(g(-2)) = f(2 - (-2)^2) = f(-2) = 3(-2) - 5 = -11$   
 (b)  $(g \circ f)(-2) = g(f(-2)) = g(3(-2) - 5) = g(-11) = 2 - (-11)^2 = -119$
21. (a)  $(f \circ g)(x) = f(g(x)) = f(2 - x^2) = 3(2 - x^2) - 5 = 6 - 3x^2 - 5 = 1 - 3x^2$   
 (b)  $(g \circ f)(x) = g(f(x)) = g(3x - 5) = 2 - (3x - 5)^2 = 2 - (9x^2 - 30x + 25) = -9x^2 + 30x - 23$
23.  $f(g(2)) = f(5) = 4$
25.  $(g \circ f)(4) = g(f(4)) = g(2) = 5$
27.  $(g \circ g)(-2) = g(g(-2)) = g(1) = 4$
29.  $f(x) = 2x + 3$ , has domain  $(-\infty, \infty)$ ;  $g(x) = 4x - 1$ , has domain  $(-\infty, \infty)$ .  
 $(f \circ g)(x) = f(4x - 1) = 2(4x - 1) + 3 = 8x + 1$ , and the domain is  $(-\infty, \infty)$ .  
 $(g \circ f)(x) = g(2x + 3) = 4(2x + 3) - 1 = 8x + 11$ , and the domain is  $(-\infty, \infty)$ .  
 $(f \circ f)(x) = f(2x + 3) = 2(2x + 3) + 3 = 4x + 9$ , and the domain is  $(-\infty, \infty)$ .  
 $(g \circ g)(x) = g(4x - 1) = 4(4x - 1) - 1 = 16x - 5$ , and the domain is  $(-\infty, \infty)$ .
31.  $f(x) = x^2$ , has domain  $(-\infty, \infty)$ ;  $g(x) = x + 1$ , has domain  $(-\infty, \infty)$ .  
 $(f \circ g)(x) = f(x + 1) = (x + 1)^2 = x^2 + 2x + 1$ , and the domain is  $(-\infty, \infty)$ .  
 $(g \circ f)(x) = g(x^2) = (x^2) + 1 = x^2 + 1$ , and the domain is  $(-\infty, \infty)$ .  
 $(f \circ f)(x) = f(x^2) = (x^2)^2 = x^4$ , and the domain is  $(-\infty, \infty)$ .  
 $(g \circ g)(x) = g(x + 1) = (x + 1) + 1 = x + 2$ , and the domain is  $(-\infty, \infty)$ .