

(1) Let $f(x) = x - 1$ and $g(x) = x^2 + x + 1$. Write down formulas for

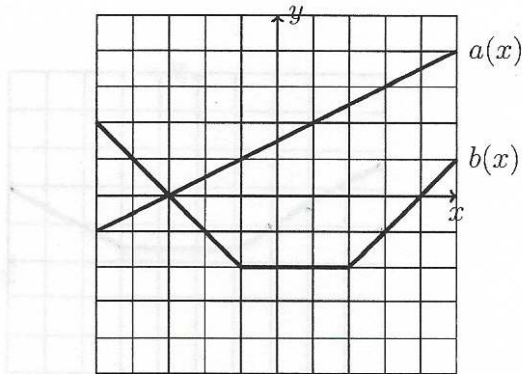
(a) $f(x) + g(x)$ $x - 1 + x^2 + x + 1 = x^2 + 2x$

(b) $f(x)/g(x)$ $\frac{x-1}{x^2+x+1}$

(c) $f(g(x))$ $f(x^2+x+1) = x^2+x+1-1 = x^2+x$

(d) $g(f(x))$ $g(x-1) = (x-1)^2 + (x-1) + 1$
 $= x^2 - 2x + 1 + x - 1 + 1$
 $= x^2 - x + 1$

(2) The graphs of two functions $a(x)$ and $b(x)$ are shown below. Find:



(a) $a(3) = 3$

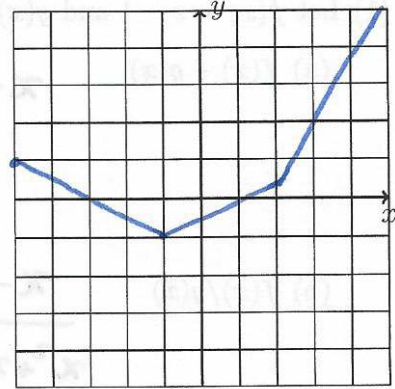
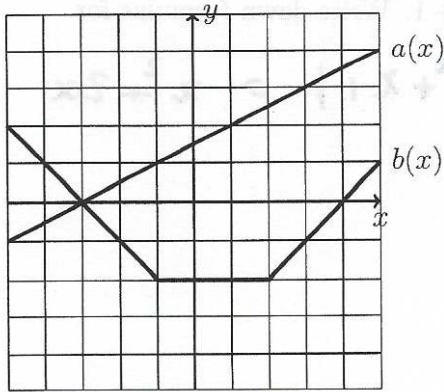
(b) $a(-1) - b(-1) = 1 - (-2) = 3$

(c) $a(b(0)) = a(2) = 0.5$

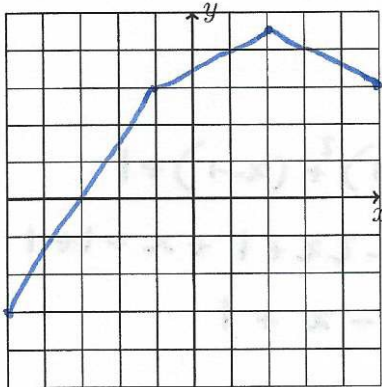
(d) $b(a(3)) = b(3) = -1$

(e) $b(b(a(1))) = b(b(2)) = b(-2) = -1$

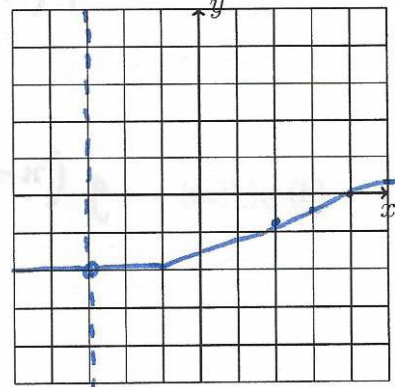
(3) For the same two functions a and b , draw graphs of the following functions.



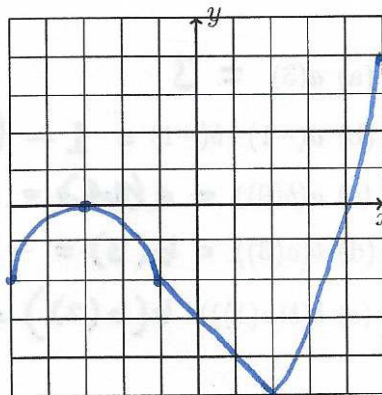
$a(x) + b(x)$



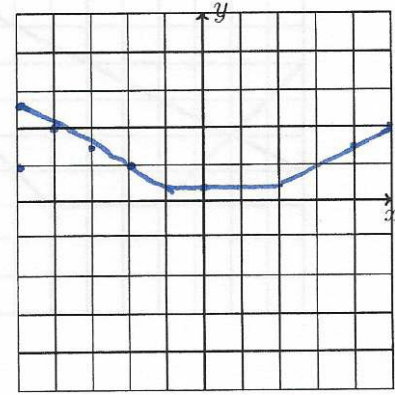
$a(x) - b(x)$



$b(x)/a(x)$



$a(x)b(x)$



$a(b(x))$