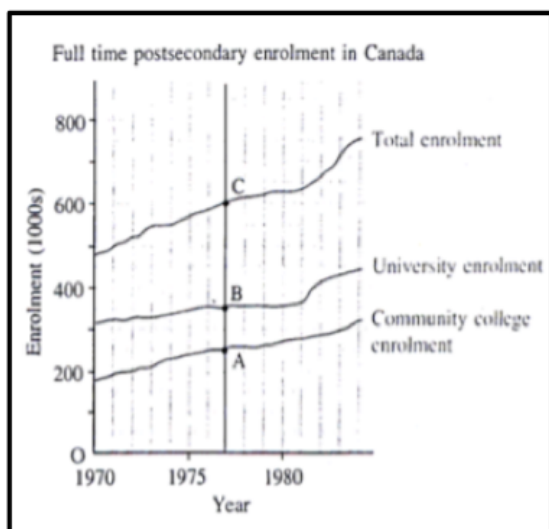


Combining Functions by Graphing



We often see graphs showing two or more functions on the same grid.

In the example on the right, Function A represents the number of students enrolled at a community college whereas Function B represents university enrollment.

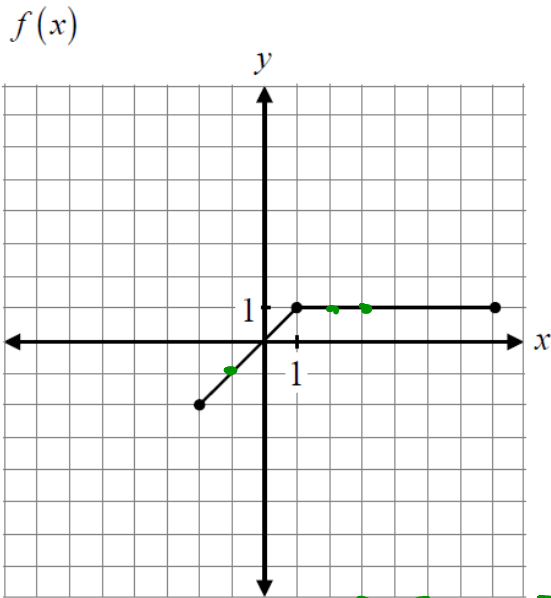
The third function, C, is the total number of students enrolled in post secondary institutions.

How would the points on the graph of the third function be obtained?

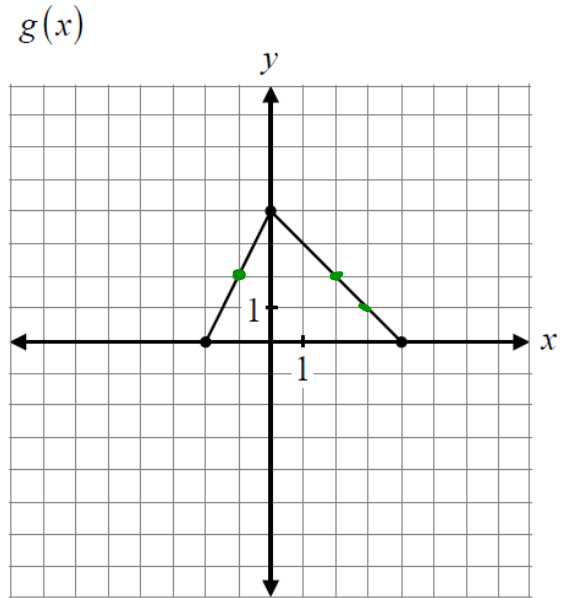
If **community college enrolment** is defined as the function $g(x)$, and **university enrolment** is defined as the function $f(x)$,

then the function $(f+g)(x)$ represents **total enrolment**.

Given the following graphs:



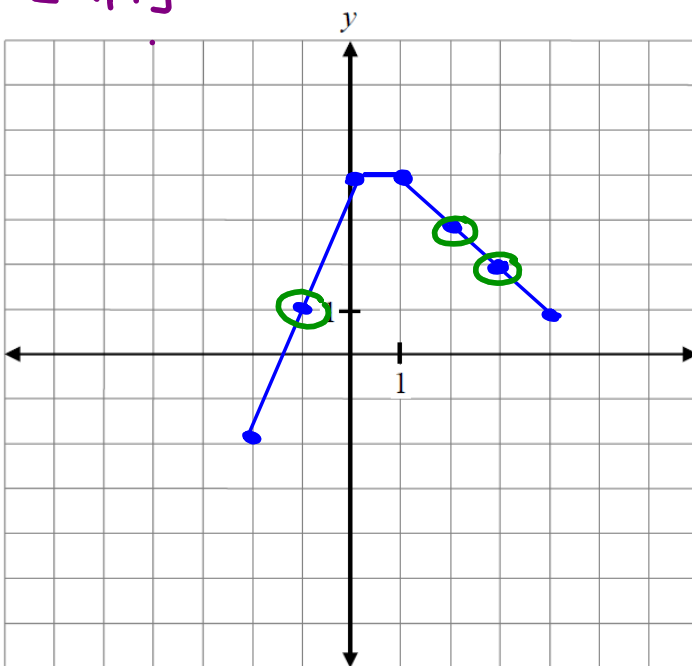
$D: [-2, 7]$



$D: [-2, 4]$

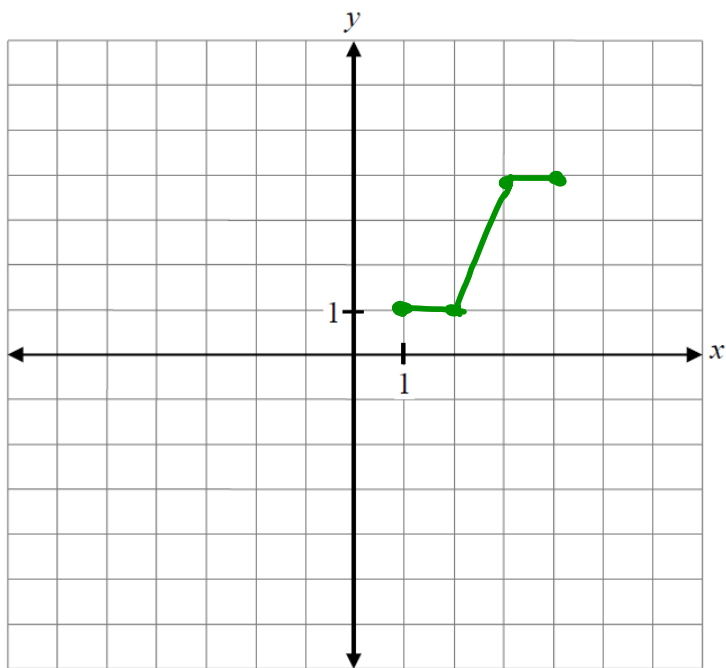
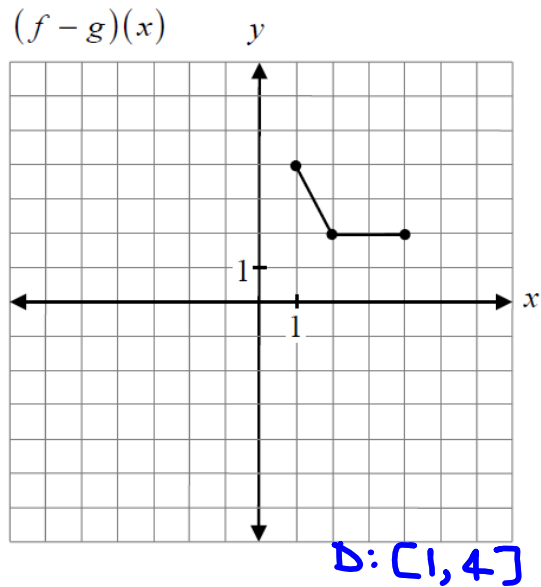
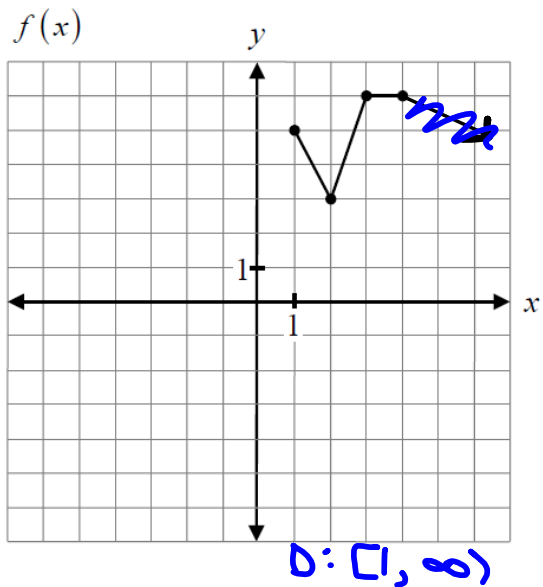
Sketch the graph of $f(x) + g(x)$.

$D: [-2, 4]$



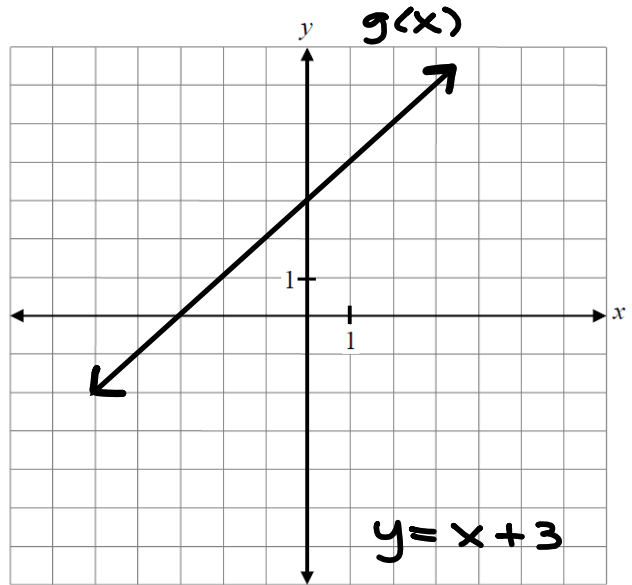
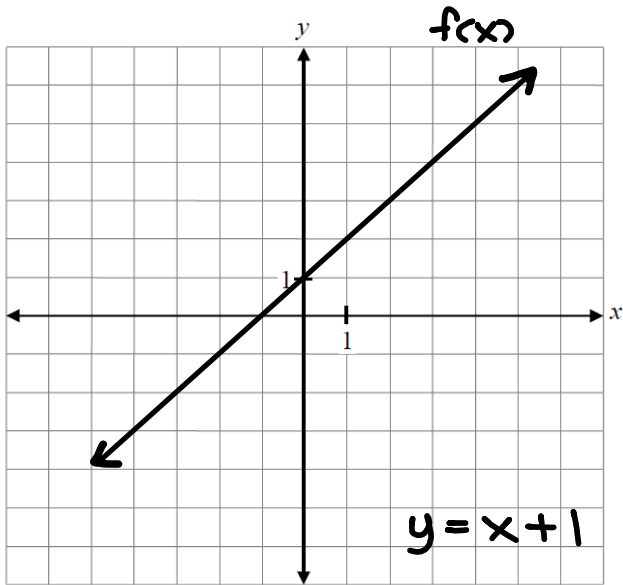
x	$f(x)$	$g(x)$	$f(x) + g(x)$
-2	-2	0	-2
-1	-1	1	0
0	1	2	3
1	1	1	2
2	1	0	1
3	1	-1	0
4	1	-2	-1

Given the graphs of $f(x)$ and $(f - g)(x)$, sketch the graph of $g(x)$.

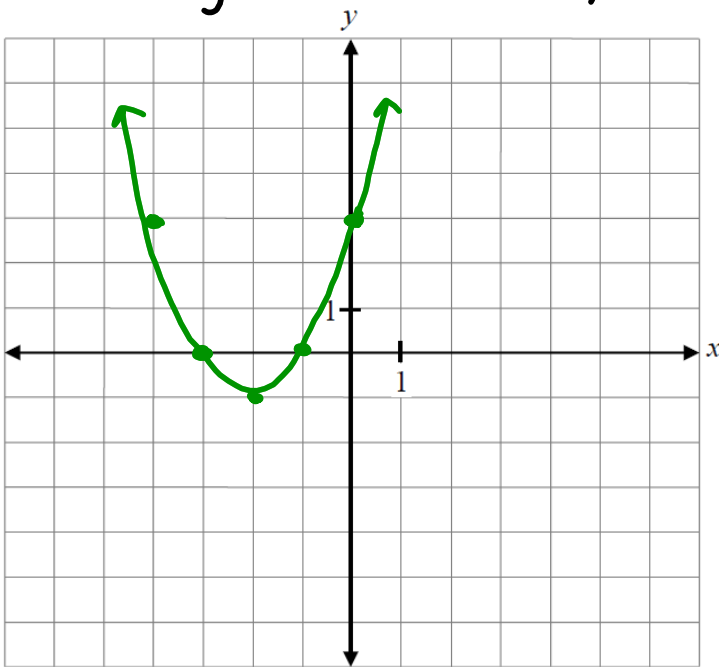


x	$f(x)$	$g(x)$	$f(x) - g(x)$
1	5	1	4
2	3	1	2
3	6	4	2
4	6	4	2

x ↑
 y ↑



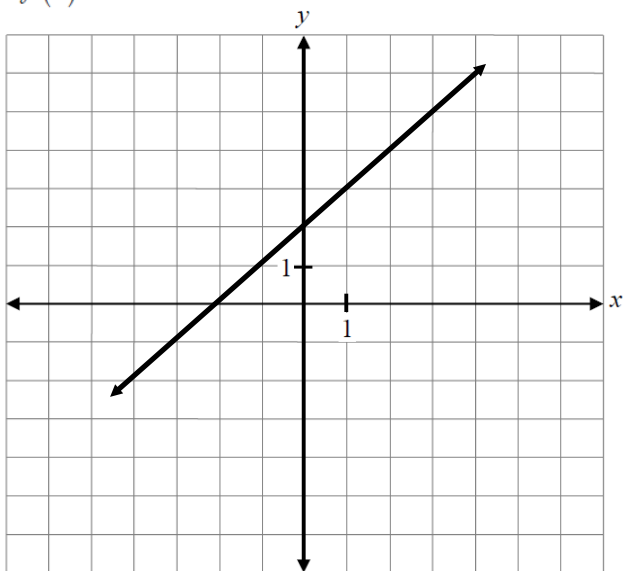
$f(x)g(x)$
 $y = (x+1)(x+3)$



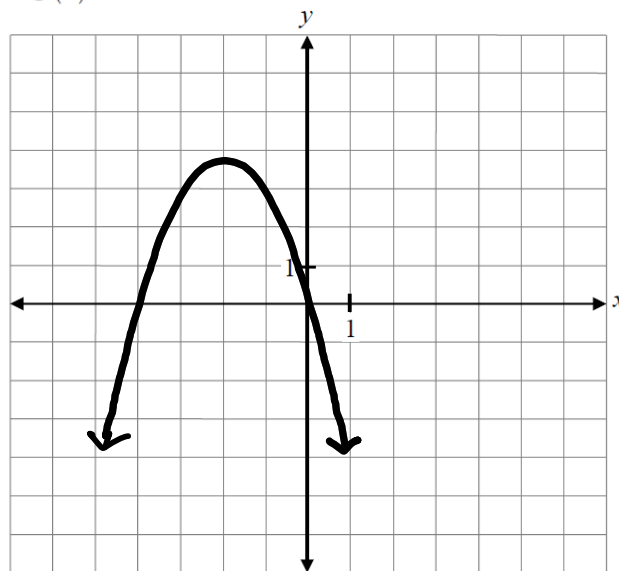
x	$f(x)$	$g(x)$	$f(x)g(x)$
-3	0	0	0
-2	-1	1	-1
-1	0	2	0
0	1	3	3
1	2	4	8

Given the graphs of $f(x)$ and $g(x)$ below,

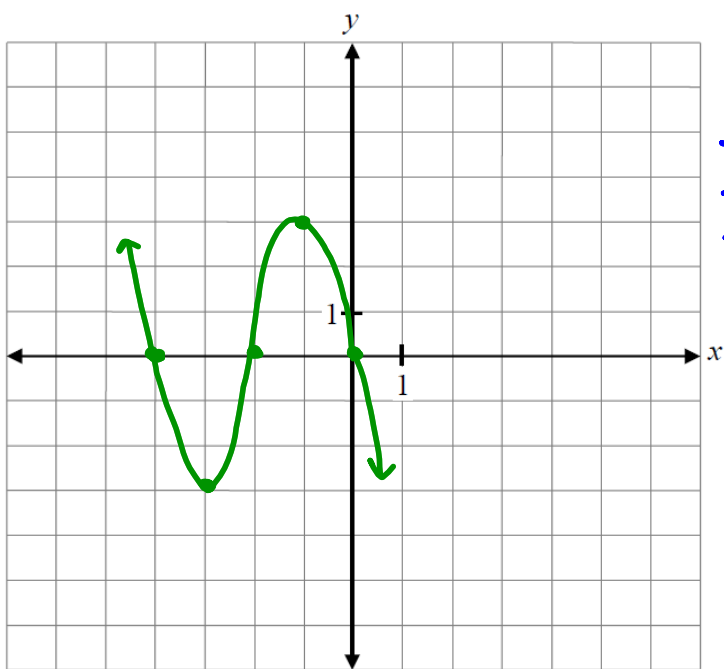
$f(x)$



$g(x)$



sketch the graph of $y = f(x)g(x)$.



x	$f(x)$	$g(x)$	$f(x)g(x)$
-1	-1	0	0
-0.5	-1.5	3	-4.5
0	-2	3.75	-7.5
0.5	-1.5	3	-4.5
1	-1	0	0