DC Pre-Cal
HW 5 (Operations on Functions)

❖ For the functions in questions 1 – 3, find $(f+g)(x), (f-g)(x), (g-f)(x)$, and their domains.

1. $f(x) = -3x + 2, g(x) = x^2 + 5x - 8$

2. $f(x) = \frac{3}{x}, g(x) = x^2 - 2x + 11$

3. $f(x) = \sqrt{x}, g(x) = x^2 + 9x - 8$

❖ For the functions in questions 4 – 6, find $f \cdot g, \frac{f}{g}, \frac{g}{f}$, and their domains.

4. $f(x) = x + 3, g(x) = \frac{1}{x+3}$

5. $f(x) = x^2 - 25, g(x) = x + 5$

6. $f(x) = x^2 - 5x + 6, g(x) = \frac{7}{x-3}$

7. $f(x) = 2x - 5, g(x) = \sqrt{x+3}$

8. If $f(x) = x^2 + 5x - 14, g(x) = -\frac{3}{x+7}$, find $f+g, f-g, g-f, f \cdot g, \frac{f}{g}$, and their domains.

❖ In questions 9 – 12, find the indicated values, where $g(t) = t^2 - t$ and $f(x) = 1 + 2x$

9. $g(f(0)) + f(g(0))$

10. $f \circ g(3) - 2f(1)$

11. $g(f(2) + 3)$

12. $f(2g(1))$

13. Let $f(x)=x^2-3x+7$, $g(x)=5x-4$, and $h(x)=\dfrac{3x-7}{2}$, find:

A. $f\circ g\circ h(5)$

B. $f(g(h(-1)))$

C. $f(g(x))$

D. $g(f(x))$

14. Given selected values of $f(x)$ and $g(x)$ in the table below, find the following values.

A. $f(g(2))$

B. $g(f(5))$

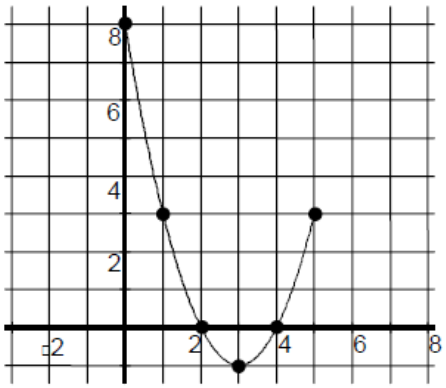
C. $f(f(g(0)))$

D. $g\circ g(4)$

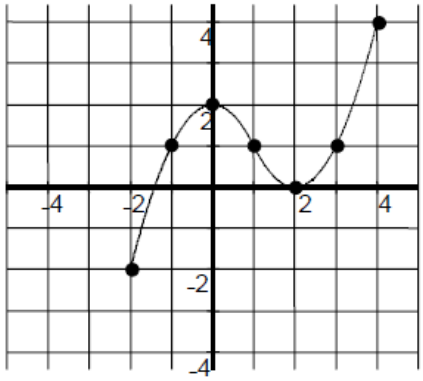
x	0	1	2	3	4	5
$f(x)$	1	5	0	4	3	2
$g(x)$	2	4	1	5	0	3

15. Use the graphs of $f(x)$ and $g(x)$ provided below to answer the following questions.

$f(x)$ is defined for $0\le x\le 5$.



$g(x)$ is defined for $-2\le x\le 4$



A. $f\circ g(0)=$

B. $f(g(1))=$

C. $g(f(3))=$

D. $g\circ f(5)=$

E. When does $f(x)=-1$?

F. When does $f(g(x))=8$?