Function Notation Problems

1. $g(x)=x^2-6x+8$

   $h(x)=1+g(x)$

   The functions *g* and *h* are defined above. What is the value of $h(0)$? *(no calculator)*

   A) 0
   B) 1
   C) 3
   D) 9

2. $f(x)=x(x+7)$

   The function *f* is defined above. If the function *g* is defined by $g(x)=f(x)+7$, what is the value of $g(2)$? *(no calculator)*

   A) 18
   B) 24
   C) 25
   D) 29

3. Functions $g(x)$ and $h(x)$ are graphed in the *xy*-plane. The graph $y=g(x)$ is equivalent to the graph $y=h(x)$ reflected over the *x*-axis. Which of the following correctly relates $g(x)$ and $h(x)$? *(no calculator)*

   A) $g(x)=h(x)$
   B) $g(x)=-h(-x)$
   C) $g(x)=-h(x)$
   D) $g(x)=h(-x)$

x	0	1	2	3	4
f(x)	3	4	-7	8	14

4. Consider the table shown above. What is the value of $f(f(1))$? *(no calculator)*

   A) 14
   B) 8
   C) 7
   D) –4

5. The graph of the function *f* is the graph of the function *h* stretched vertically by a factor of 4 and reflected over the *x*-axis. Which of the following correctly defines the function *f*? *(no calculator)*

   A) $f(x)=h(-4x)$
   B) $f(x)=-4h(-x)$
   C) $f(x)=4h(-x)$
   D) $f(x)=-4h(x)$

6. Let $f(x)=x^2-x$ and let $g(x)=\frac{1}{x}$. Assuming *x* does not equal 0, which of the following is equivalent to $f(g(x))$? *(no calculator)*

   A) $\frac{x}{x^2-1}$
   B) 0
   C) x
   D) $\frac{1}{x^2}-\frac{1}{x}$

7. Let $f(x)=4x-7$. Which of the following is equivalent to $f(f(x))$? *(no calculator)*

   A) $16x-28$
   B) $16x-35$
   C) $4x-7$
   D) $4x-35$

8. Consider the table shown below. What is the value of $(g\circ f)(-1)$? *(no calculator)*

x	*f(x)*	*g(x)*
-2	-4	-7
-1	2	5
1	3	8
2	7	12

   A) 12
   B) 8
   C) 7
   D) 2

9. Consider the table shown below. What is the value $\left(g \circ f\right)\left(-2\right)$? *(no calculator)*

x	*f(x)*	*g(x)*
-3	-6	-5
-2	1	3
1	4	8
0	2	12

A) 1
B) 3
C) 4
D) 8

10. $f\left(x\right)=x^2-16$

$g\left(x\right)=x^2-6x+9$

Given the following functions above find the value of *h(x)* if $h\left(x\right)=\frac{f\left(x\right)}{\left(x+4\right)}-\frac{g\left(x\right)}{\left(x-3\right)}$. *(no calculator)*

A) -1
B) $\frac{\left(x-4\right)^2}{\left(x+4\right)}$
C) $\left(x-4\right)\left(x-3\right)$
D) -7