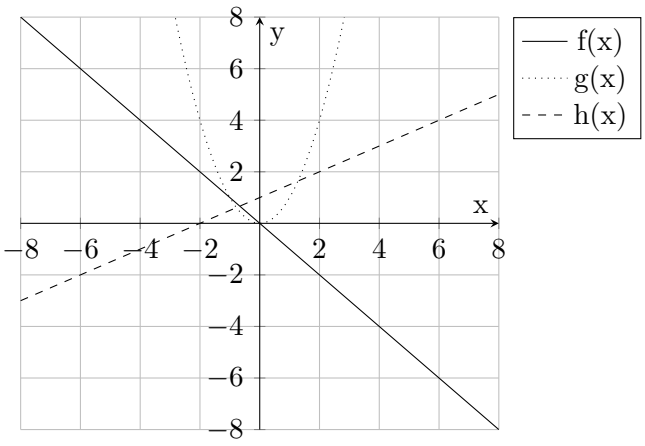
AP Calc. AB - Exam 3 Practice Problems
Exam date: September 7 Name: _____

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

1. Using the table above, evaluate the following:
   (a) $f(h(f(1))) \div (f \circ g)(2)$
   (b) $(h \circ g \circ f)(5)$
   (c) $g(f(3)) - h(h(2))$
   (d) $(f \circ g)(h(f(4)))$

2. From the graphs of f, g, and h below, estimate the values of $g(f(h(x))$ for $\{x \, \epsilon \, \mathbb{Z} \mid -3 \leq x \leq 3\}$.



3. From f and g defined below, evaluate each expression.

$$f(x) = -|x+2| - 3, \; g(x) = \begin{cases} -x & \text{if } x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$$

   (a) $f(h(f(1))) \div (f \circ g)(2)$
   (b) $(h \circ g \circ f)(5)$
   (c) $g(f(3)) - h(h(2))$
   (d) $(f \circ g)(h(f(4)))$
   (e) $g(f(3)) - h(h(2))$
   (f) $(f \circ g)(h(f(4)))$

4. For each part, find the following functions and their domains: $(f \circ g)$, $(g \circ f)$, $(f \circ f)$, and $(g \circ g)$.
   (a) $f(x) = \tan(x), \; g(x) = \sin(x)$
   (b) $f(x) = \tan(x), \; g(x) = \sin(x)$
   (c) $f(x) = \tan(x), \; g(x) = \sin(x)$
   (d) $f(x) = \tan(x), \; g(x) = \sin(x)$

5. Find $f \circ g \circ h$.
   (a) $f(x) = \tan(x), \; g(x) = \sin(x), \; h(x) = \sin(x)$
   (b) $f(x) = \tan(x), \; g(x) = \sin(x), \; h(x) = \sin(x)$
   (c) $f(x) = \tan(x), \; g(x) = \sin(x), \; h(x) = \sin(x)$
   (d) $f(x) = \tan(x), \; g(x) = \sin(x), \; h(x) = \sin(x)$

6. Express each function in the form $f \circ g$:

(a) $f(x) = \tan(x),\ g(x) = \sin(x)$

(b) $f(x) = \tan(x),\ g(x) = \sin(x)$

(c) $f(x) = \tan(x),\ g(x) = \sin(x)$

(d) $f(x) = \tan(x),\ g(x) = \sin(x)$