Name: _____ Date: _____

PCH – Composition of Functions – A Quick Review from A2CCH

(1) Let $f(x) = 2x^2$ and $g(x) = x + 3$. Find the following values.

(a) $(f \circ g)(-1)$

(b) $(g \circ f)(-1)$

(c) $(g \circ g)(2)$

(2) Suppose $f(1) = 2$, $f(0) = 5$, $g(2) = 6$, g(3)=7 and $g(-3) = 0$. Find the following values.

(a) $(f \circ g)(-3)$.

(b) $(g \circ f)(1)$.

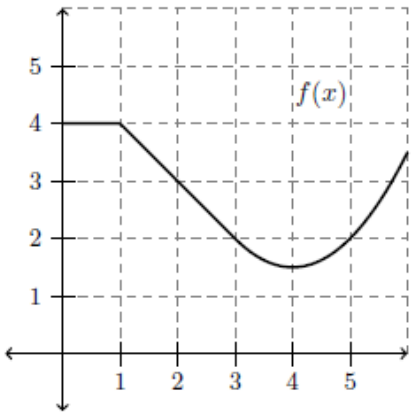
(3) Suppose f is the function that takes a number and doubles it and g is the function that adds 1 to a number and then squares that sum. Find the following values.

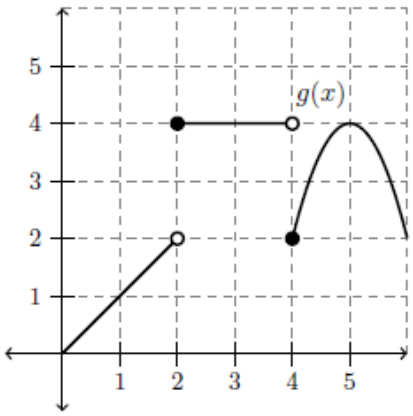
(a) $(f \circ g)(1)$

(b) $(g \circ f)(-2)$

(c) $(f \circ f)(3)$

(4) Let $f(x)$ and $g(x)$ be functions defined on [0,5] with the graphs shown below. Use the graphs to evaluate the following.





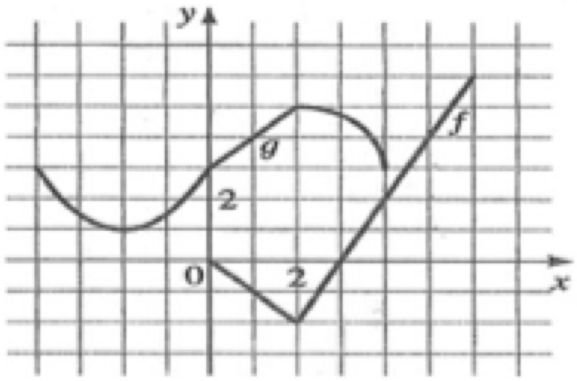
(a) $(f \circ g)(1)$

(b) $(f \circ f)(2)$

(c) $(g \circ f)(5)$

Practice:

For 1-6, use the given graphs of *f* and *g* to evaluate the expression.



1. $f(g(2))$ 2. $g(f(0))$ 3. $(g \circ f)(4)$

4. $(f \circ g)(4)$ 5. $(g \circ g)(-2)$ 6. $(f \circ f)(4)$

7. For each of the following, find the functions $(f \circ g)(x)$ and $(g \circ f)(x)$.

(a) $f(x) = 2x + 3,\ g(x) = 4x - 1$ (b) $f(x) = 6x - 5,\ g(x) = \frac{x}{2}$

(c) $f(x) = x^3 + 2,\ g(x) = \sqrt[3]{x}$ (d) $f(x) = x^2,\ g(x) = \sqrt{x-3}$

(e) $f(x)=x^2,\ g(x)=x-1$

8. Find $f(g(h(x)))$

(a) $f(x)=x-1,\ \ g(x)=\sqrt{x},\ \ h(x)=x+1$

(b) $f(x)=\dfrac{1}{x},\ \ g(x)=x^3,\ \ h(x)=x^2+2$

(c) $f(x)=x^4+1,\ \ g(x)=x-5,\ \ h(x)=\sqrt{x}$

(d) $f(x)=\sqrt{x},\quad g(x)=\dfrac{x}{x-1},\quad h(x)=\sqrt[3]{x}$