Name: _____

1.5 Combinations and Composition of Functions 1

1) Given $f(x)=6x+9$ and $g(x)=3-x^2$, find each of the following

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

2) Given $f(x)=\frac{1}{x}$ and $g(x)=7x+6$ find each of the following function compositions and determine the domain of each.

   1) $f \circ g(x)$
   2) $g \circ f(x)$
   3) $f \circ f(x)$
   4) $g \circ g(x)$

3) The functions f and g are defined by f: $x \to 3x, x \in \mathbb{R}$ and $x \to x^2-2, x \in \mathbb{R}$

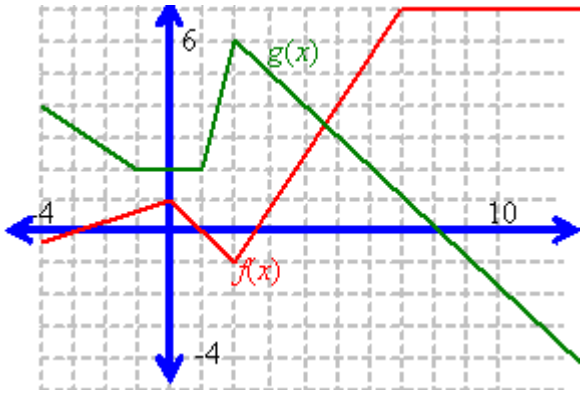
   1) Find the function fg
   2) What is the range of fg?

4) In each of the following, find functions f and g such that $(g \circ f)(x)=h(x)$

   1) $h(x)=\sqrt{3x+5}$
   2) $h(x)=(x^2+x+4)^{-5/2}$
   3) $h(x)=(x^{1/3})^2+5(x^{1/3})-3$

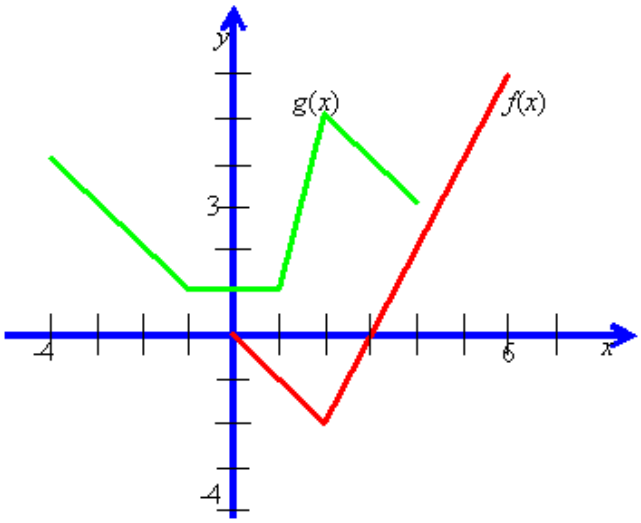
5) Express the function $h(x)=(x-5)^2$ in the form $f \circ g$. If $f(x)=x^2$, find the function $g(x)$

6) For the functions $f(x)$ and $g(x)$ are given in the graph below. Find the indicated corresponding function values



1) $(f+g)_{(1)}$
2) $(f-g)_{(-3)}$

7) Given the graph below, find the indicated function values



1) $f(g(-3))$
2) $g(f(2))$