First Name _____ Last Name _____ Date ___ – ___ – ___ Period ____ Score ____

1. The standard form of a quadratic equation is $ax^2 + bx + c = 0$. Identify the a, b and c for the following equations:

   (1) $x^2 - 2x + 4 = 0$

   $a =$ $b =$ $c =$

   (2) $-2x^2 + 3 = 0$

   $a =$ $b =$ $c =$

   (3) $9x^2 + x - 4 = 6$

   $a =$ $b =$ $c =$

   (4) $x^2 - 2x + 3 = -x^2 + 2x$

   $a =$ $b =$ $c =$

2. Let $f(x) = 2x - 1$ and $g(x) = x^2 + 1$.

   (a) Find $f(g(-3))$.

   (b) Find $f(x^2 - 3)$ and simplify.

   (c) Find $(g \circ f)(x)$ and simplify.

3.

x	1.0	1.5	2.0	2.5	3.0	3.5
f(x)	2.8	2.6	2.5	2.0	1.0	2.2

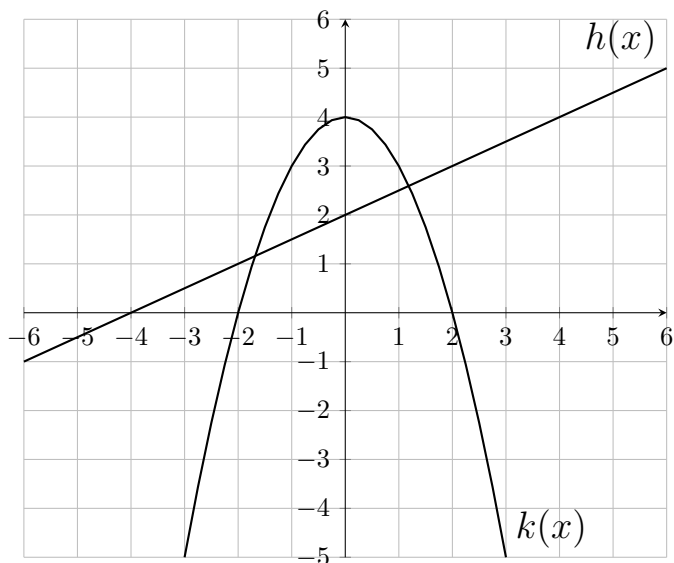| x	2.0	2.2	2.4	2.6	2.8	3.0
g(x)	1.2	1.5	3.0	2.8	2.5	2.0

Find the following using the tables above:

   (a) $(g \circ f)(2.5)$

   (b) $(f \circ g)(3.0)$

   (c) $(g \circ g)(2.4)$

4. The graph below contains the lines for $h(x)$ and $k(x)$. Use it to find the following:

a) $(h \circ k)(0) =$

b) $(h \circ k)(-1) =$

c) $(k \circ h)(0) =$

d) $(k \circ h)(2) =$

5. When a small stone is dropped into a calm pond, the radius of the outermost visible ripple (in centimeters) after t seconds is modeled by
$$r(t) = 15\sqrt{t}.$$
The area of the ripple (in cm^2) is given by $A(r) = \pi r^2$. Assume the ripple fades and disappears after 9 seconds.

(a) Write the area as a function of time, $(A \circ r)(t)$.

(b) State the realistic domain and range of $(A \circ r)(t)$.

(c) Explain in words what $(A \circ r)(t)$ represents in this situation.