Please complete these problems and show your work. The assignment will be due on the first day of school. You should be able to solve each problem **without a calculator**.

1. The function f is represented by the graph.
   The function g is represented by the equation $g(x) = x^2 - 1$
   Read each statement given in the table below, then place a check mark in each cell of the table for which the statement is true. In some cases you will have to complete the statement.
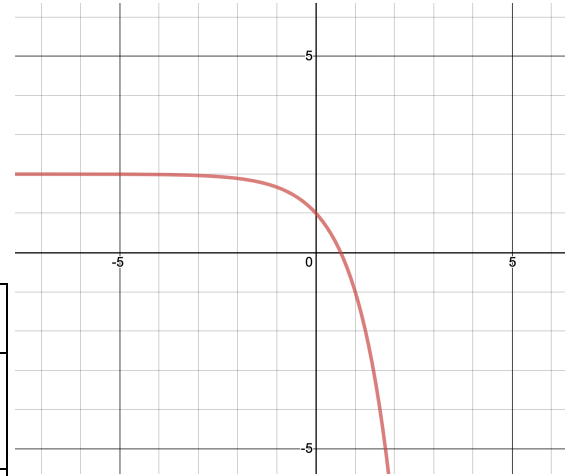
The equation of f is _____

	f	g
The line y = 2 is an asymptote of the function		
The domain is the set of all real numbers		
The function is one to one		
	The inverse of the function is	The inverse of the function is
	The y-intercept is	The y-intercept is
The function is exponential		
	As $x \to -\infty$, $f(x) \to$	As $x \to -\infty$, $g(x) \to$

2. Given that $f(x) = -4x + 1$ and $g(x) = 2x^2 - 3$

    a. $g(f(x)) =$

    b. $f(g(x)) =$

    c. $g(f(-1)) =$

2. Solve the following equations for x.   Leave your answers in terms of e and ln if necessary.
    a. $e^{3x} = 15$

    b. $\ln(8x) - \ln(4) = 6$

c. $\ln(5^x) = -2$

3. $f(x) = -x^3 - 9x^2 - 24x - 19$

    a. $f(-3) = $ _____

    b. $f(-5) = $ _____

    c. Determine the slope of the line connecting the 2 function points determined in parts (a) and (b) above.

4. Solve the following equation for x. $-3x^2 - 18x - 24 = -1$ Your answer will have a square root symbol.

5. Find the area of a square inscribed in the circle $x^2 + y^2 = 64$.

6. Write an expression for the distance (d) from the point (6, 0) to the graph of $y = \sqrt{x}$. *Hint: it doesn't matter if x > 6 or x < 6.*

7. Solve for x: $2x\left(\frac{1}{2}\right)(25 - x^2)^{-\frac{1}{2}}(-2x) + 2(25 - x^2)^{\frac{1}{2}} = 0$. Your answer will have a square root symbol in it.

8. Evaluate each trig function value.

    a. $\sin\left(\frac{5\pi}{4}\right)$

    b. $\tan\left(\frac{11\pi}{6}\right)$

    c. $\cot(\pi)$

    d. $\cos\left(\frac{3\pi}{4}\right)$

e. $\sec\left(\frac{\pi}{3}\right)$

f. $\csc\left(\frac{3\pi}{2}\right)$

g. $\tan(135°)$

h. $\sec(240°)$

i. $\cot(0°)$

j. $\sin(-45°)$

k. $\csc(720°)$

l. $\cos(180°)$

9. Evaluate

$$\sec\left(\tan^{-1}\left(-\frac{5}{12}\right)\right)$$

10. Solve

$$\cos(2x) - 1 = \sin^2 x$$