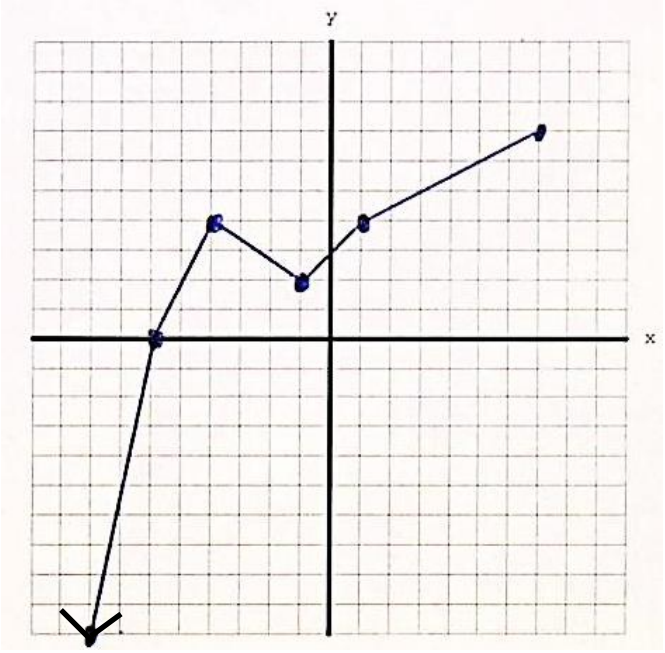
Algebra 2 Unit 3 HW #4 Name:_____ Period: _____

1. Describe the transformations.
   a. $y = -\frac{3}{4}\sqrt{x} - 9$
   b. $y = 2(x-4)^2 + 15$

2. Find the value of each, if $f(x) = 2x^2 - x + 4$ and $g(x) = x - 2$ and $h(x) = -4x^2$
   a. $g(f(3))$
   b. $h(g(x))$

3. Use the relation graphed to the right to answer the following questions:
   a. Is the relation a function?
   b. State the domain for the relation.
   c. State the range for the relation.
   d. Graph the relation's inverse.
   e. Is the inverse a function?
   f. State the domain for the inverse.
   g. State the range for the inverse.



4. Simplify.
   a. $(7-3i)(4i+1)$ b. $\sqrt{-288}$

5. Prove the following equation has exactly one solution. $\sqrt{-3x+10}=x$

6. I have a 4 by 9 by 14 inch box. I would like to increase each side by the same amount so that the new volume is 168 more than 7 times the original.
   a. By how much do you need to increase each side?

   b. What are the new dimensions?

7. Given the transformations, write the equations:
   a. Quadratic
      Vertical Dilation: 6
      Horizontal Translation: -4
      Reflection

      Equation:

   b. Radical
      Vertical Translation: -11
      Vertical Dilation: 4/3
      Horizontal Translation: 5

      Equation:

8. Solve.
   a. $\ln(6x+1)=4$ b. $log_{11}5x-log_{11}4=log_{11}10$

   c. The car I bought for $32,000 is losing 3% of its value every year. When will it be worth $25,000?