

**Math 105 Precalculus**  
**Quiz 4, Section 2.5**

Name ANSWER KEY A  
 October 15, 2009

Please show all work neatly. Use of calculators is not permitted. Please put your answers on the lines provided.

All questions on this quiz concern the quadratic function  $f(x) = -x^2 + 6x - 8$ .

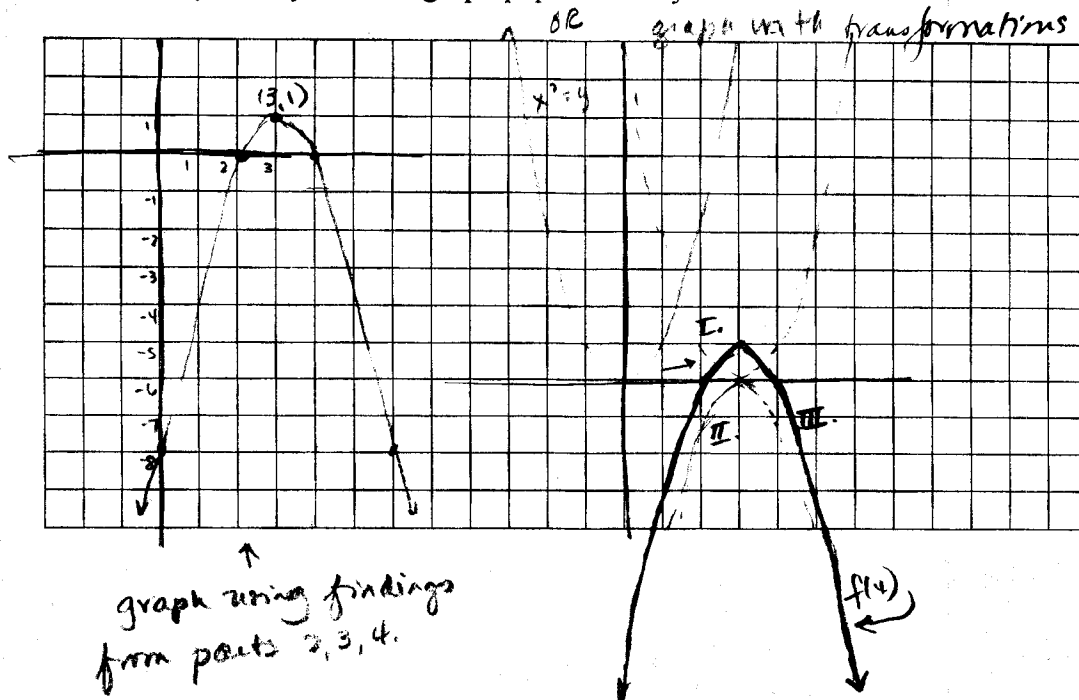
- Express the function  $f(x)$  in standard form.  $f(x) = -(x-3)^2 + 1$   
 $f(x) = -1(x^2 - 6x) - 8 = -1(x^2 - 6x + 9 - 9) - 8 = -1(x^2 - 6x + 9) + 9 - 8 = -1(x-3)^2 + 1$
- What is the vertex of the function (both x and y coordinates)? (3, 1)
- What is the y-intercept?  $y = -8$  (or  $(0, -8)$ ) Let  $x = 0$ ;  $f(0) = -8$ .
- What is/are the x-intercept(s), if any?  $x = 2, x = 4$

Let  $-(x-3)^2 + 1 = 0$       $x - 3 = \pm\sqrt{1} = \pm 1$   
 $(x-3)^2 = 1$       $x = 3 \pm 1$ ; so  $x = 4, x = 2$

- Does the parabola open up or down? down How do you know?  $a = -1$  (less than 0)
- Explain in words (in terms of function transformations) how the graph of  $f(x) = -x^2 + 6x - 8$  is obtained from the graph of  $g(x) = x^2$ .

- Shift 3 to right
- Reflect across x-axis.
- Move up by 1.

- Graph the function  $f(x) = -x^2 + 6x - 8$ , showing all information you found above. Note: you may turn the graph paper sideways if it is easier.



work  
 $b = -6$   
 $\frac{b}{2} = -3$   
 $(\frac{b}{2})^2 = 9$   
 3 pts.  
 2 pts.  
 1 pt.

2 pts.  
 3 pts.

2 pts.  
 13 pts.