Quiz 2
Math 111

Name:

Show *all* your work algebraically for each and simplify. No credit is given without supporting work.

1. [5] Let the following describe the function α:

input:	$\bigcirc$	$\star$	Δ	$\star + \Delta$	
output:	4	-2	3	-4	

Find the following if possible:

$\alpha(\star) + \alpha(\Delta)$ $\qquad\qquad\qquad\qquad$ $\alpha(\star + \Delta)$

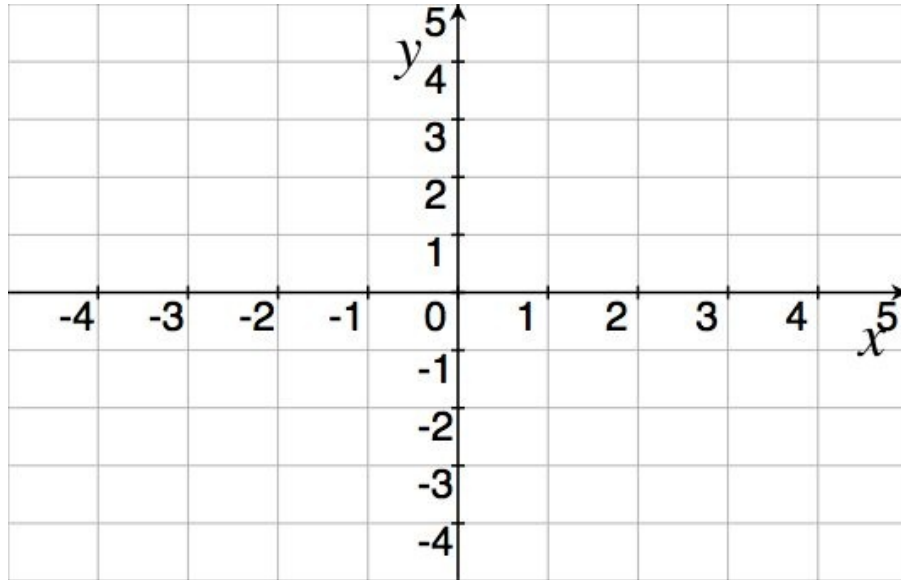$\alpha(\bigcirc) \times \alpha(\star + \Delta)$ $\qquad\qquad\qquad$ $\alpha(\Delta + \Delta)$

2. [5] Given $g(x) = |-2x - 6|$, find z such that $g(z) = 3z - 5$. *Check your answers!*

3. [5] Given that the function f is defined by:

$$f(x) = \begin{cases} -2 & x < -2 \\ |x| & -2 \le x \le 1 \\ -\frac{1}{2}x + \frac{3}{2} & 1 \le x \le 3 \end{cases}$$

Graph f.

4. [5] Find the difference quotient of g if $g(x) = \frac{1}{x}$. Simplify your answer as much as possible. Recall the difference quotient of a function f is:

$$\frac{f(x+h) - f(x)}{h}$$