Ch 4 Topics to Review

4-1
Definition of function (every input has only one output)
Vertical Line Test
Function Notation (composition written two ways, composition vs. multiplication, ordered pair written in function notation)
Domain and Range from equation, graph, table, set of ordered pairs

4-2
Add, subtract, multiply divide functions (for division, state domain restrictions on the quotient)
Adding functions on a graph
Function Composition

4-3
Symmetry with x-axis, y-axis, y=x, origin
Testing functions for symmetry by plugging into equations or looking at graphs
"Proving" functions even, odd, etc.
Sketching reflections and absolute values of graphs
Point of symmetry (-b/3a, y)
Local max, min, point of symmetry problems using midpoint

(Quiz)

4-4
Periodic functions—shifting them by a multiple of the period, f(x+p), doesn't change the graph
Y=af(b(x-c)+d going to (x/b + c, ay + d)
Factoring out "b" in the equation above
The new period for y = f(cx) is p/c (eg. Y = sin2x has a period equal to $2\pi/2$ or $\pi$
Amplitude = (max-min)/2
Y=2f(x) doubles the amplitude
Greatest integer function

4-5
Horizontal Line Test
One to one functions
Restricting domains to make functions one to one
Switch x and y and solve for y to find a "rule" or equation for the inverse function
Reflect graphs over y=x to find graph of inverse function
*Know that the left half of a parabola has an inverse that is the bottom half of the parabola and vice versa. Know whether to take the positive or negative square root when finding the inverse.

Make sure to state the domain of the inverse. If the equation looks like a whole parabola and it shouldn't be, you must identify which half it should be.

4-7
Word problems
Using substitution (circumference, Pythagorean theorem, etc) to get functions in terms of the requested variables
Maximizing and minimizing functions—eg. Find the maximum area using your graphing calculator.
Box problems
(x,y) points on a parabola problems
Shortest distance problems