Quiz 1

Key

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. [2] Define a function as you would to a 12 year old. Consider using examples to help clarify ideas.

(X) A function is a rule that assigns objects to objects.

(X) It has to be done in such a way that you only get one answer for each object you send in though. So a function could take an apple & return 99¢ but a function can't take an apple & return 99¢ AND 50

2. Let $f(x) = x^2\sqrt{9-4x}$.

(a) [1] (WebHW1 #5) Find $f(3+h)$.

$f(\boxed{3+h}) = \boxed{3+h}^2\sqrt{9-4\boxed{3+h}}$ or $(9+6h+h^2)\sqrt{9-12-4h}$

$= (3+h)^2\sqrt{9-4(3+h)}$ or $(9+6h+h^2)\sqrt{-3-4h}$

(b) [1] (§1.1 #30) Is the point $(-1, -\sqrt{13})$ on the graph of f? Why or why not?

$f(-1) = (-1)^2\sqrt{9-4(-1)}$ (+.5) no $f(-1) = \sqrt{13}$

$= 1\sqrt{9+4} = \sqrt{13}$ (+.5) so $(-1, \sqrt{13})$ is on the graph of f.

(c) [2] (WebHW1 #9) Use the domain convention to find the domain of f?

(+.5) Convention: Domain = all #'s that return a real # with f.

(+.5) i.e. all x so that $f(x)$ is a real #

i.e. all x so that stuff under the sqrt is nonneg

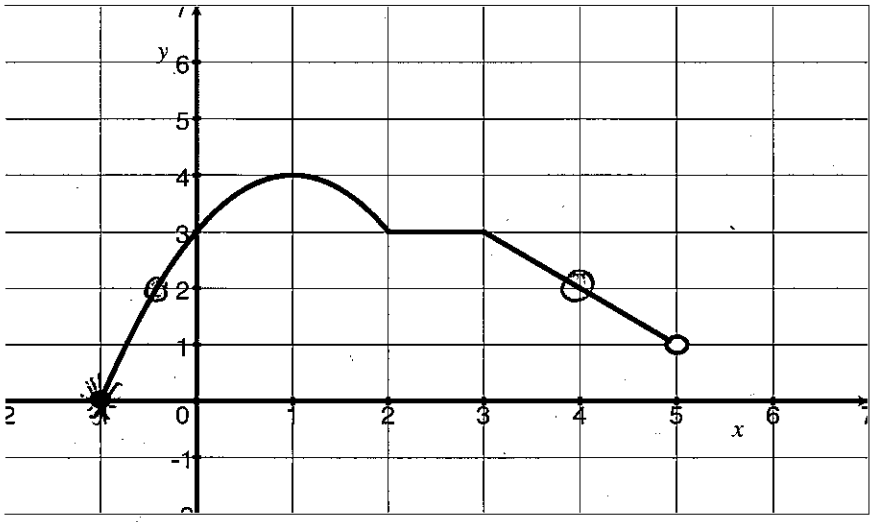
i.e. $9-4x \geq 0$ alg (+.5)

$\Rightarrow -4x \geq -9$

$x \leq 9/4$ or $(-\infty, 9/4]$

(+.5) or all real #'s less than or equal to 9/4

3. Let g be the piecewise defined graph shown below.



(a) [1] (§1.3 #14) Find $g(4)$

2
(+1)

(b) [1] *Estimate* x such that $g(x) = 2$.

4 and $-\frac{1}{2}$
(+.5) (+.5)

(c) [1] (§1.1 #48) Identify the x intercept(s).

$x = -1$ or happens at $(-1, 0)$
or at the "*" spot identified above.

(d) [1] What is the range of g?

(+.5) the set of outputs so y values which range between 0 and 4

(+.5) inclusive

or

$[0, 4]$