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.

(+1) A function is a rule that assigns objects to objects.
(+1) It has to be done in such a way that you only get one answer for each object you send in. So a function could take an apple & return 99¢ but a function can't take an apple & return 99¢ AND π

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

$= (3+h)^2\sqrt{9-4(3+h)}$ (+.5) (+.5)

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

$f(-1) = (-1)^2\sqrt{9-4(-1)} = 1\cdot\sqrt{9+4} = 1\cdot\sqrt{13} \neq -\sqrt{13}$

no, not on the graph

(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 sqrt is nonnegative

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

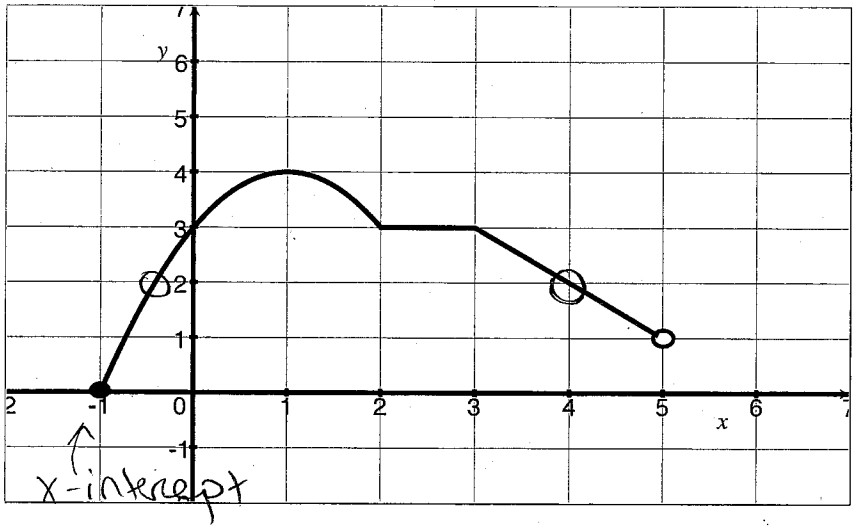
$-4x \geq -9$

$\frac{-4x}{-4} \quad \frac{-9}{-4}$

(+.5) $x \leq 9/4$ or $(-\infty, 9/4]$

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).

when $x = -1$ (+1)

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

(+.5) the set of outputs
(+.5) i.e. the y values returned
i.e the range between 0 & 4 inclusive
or
$[0,4]$
or
$0 \leq y \leq 4$