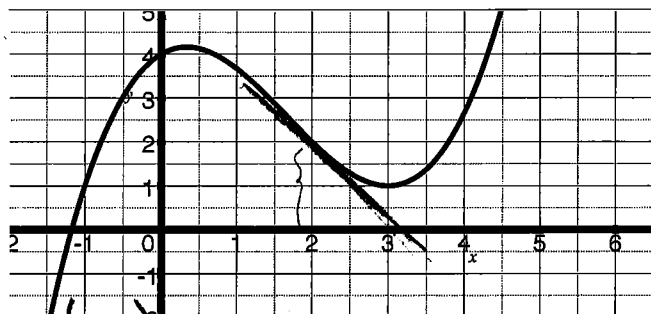# Quiz 2 *Key*

This is a two-stage quiz. During the first stage, use your knowledge & calculator. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have the remainder of the quiz time to write one solution (with everyone's name on it!!!) to be turned in for the group.

Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. [4] Use the graph of h for the questions below.

Webwork 5 #4
Derivative Activity #1

Estimate $h'(2)$ *drawing line* (+.5)

$$\frac{rise}{run} \approx \frac{-2^{(+.5)}}{1.2} = -1.67$$

(+.5)   (+.5)

Use your work to find/estimate the equation of a line tangent to h at $x = 2$.

§27 #28
Webwork 5 #1
Derivative Activity #2

(+.5) *Looking for* $y = mx + b$ or $y - y_1 = m(x - x_1)$

M = *slope of line tang. when* $x = 2$ (+.5)

$= h'(2)$

≈ -1.67 *from above*

$\Rightarrow y = -1.67x + b$
thru $(2,2)$
$\Rightarrow 2 = -1.67(2) + b$
$\Rightarrow b = -1.34$

or $y - y_1 = -1.67(x - x_1)$
thru $(2,2)$ (+.5)

$\boxed{\Rightarrow y - 2 = -1.67(x - 2)}$

plug in (+1)

2. [4] Sketch the graph of a function α that satisfies *all* of the following.

(+1)

Continuity Activity #5

(a) $\alpha(-3) = 2$ (+1)

(b) α is discontinuous at $x = 2$ (+1)

(c) $\lim\limits_{x \to \infty} \alpha(x) = -2$ (+1)
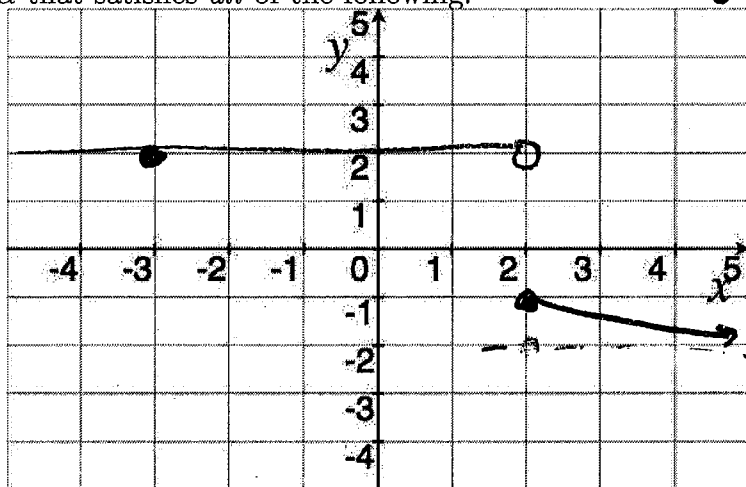
Note, there are LOTS of answers that can work here?

3. [2] Find a formula (algebraic rule) for the function α you graphed above.

§26 #58

$$\alpha(x) = \begin{cases} 2 & \text{if } x < 2 \\ \dfrac{1}{x-1} - 2 & \text{if } 2 \le x \end{cases}$$

function (+.5)
match (+.5)
shift (+.5)
notation (+.5)

graph of $\dfrac{1}{x}$ *shifted down*

$\dfrac{1}{x} - 2$

shifted right 1

$\dfrac{1}{x-1} - 2$