Quiz 2

Key

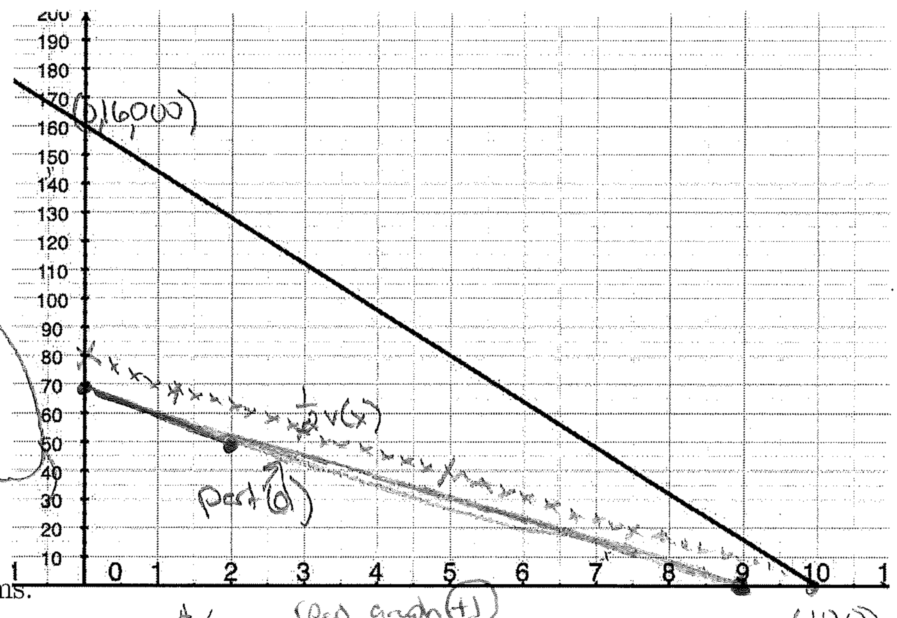
This is a two-stage quiz. You will be given this sheet of paper twice.

The first (colored) copy of the quiz corresponds with the first stage. Use your knowledge & calculator to take this quiz–no notes, books, internet resources, faculty, tutors or colleagues. You have 15 minutes.

The second (white) copy of the quiz corresponds with the second stage. You are now welcome to use your books, notes, and students in the class to retake the same quiz. You have 15 minutes to complete the quiz and to build one solution to be turned in (with everyone's name on top!).

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

1. The value v of a tractor is graphed (in hundreds of dollars) on the right as a function of time, t.



(a) [1] What is the initial value of the tractor?

$16000 (+.5)

(note need to convert b/c (+.5))

(b) [3] Find the slope and interpret what it means in practical terms.

read graph (+1)

(+.5) $\frac{\text{rise}}{\text{run}} = \frac{-16000}{10} = -1{,}600$ \$/time unit (+.5)

note if you don't use \$ then $\frac{-160}{10} = -16$ hundreds \$/time

(+1) every unit of time we lose \$1,600 in value (probably years)

(c) [2] Find the algebraic rule for the function v.

line so $y = mx + b$ (+.5)

part (b) => $m = -1{,}600$ (+.5) part (a) -> $b = 16000$ (+.5) So $y = -1600t + 16000$ (+.5)

note b/c specify hundreds of \$ ok w/ $-16t + 160$

(d) [2] Let w be the value of a different tractor whose value as a function of time is given by $w(t) = \frac{1}{2}v(t+1)$. Graph w on the axis. (Consider describing the transformations as well!)

+.5 vertical "stretch" by ½ i.e. mult y coord by ½

horizontal shift left by 1 +.5

shape (+.5) graph (+.5)

So $w(t) = \frac{1}{2}v(t+1) = \frac{1}{2}[-1600(t+1) + 16{,}000]$

2. [2] Find functions $f(x)$ and $g(x)$ so that $(f \circ g)(x) = \frac{4}{x^2+1} - 3$.

lots of right answers here!

broke up (+1) got it (+.5)

$g(x) = x^2 + 1$, $f(x) = \frac{4}{x} - 3$ works

or? start (+.5)

$g(x) = x^2$, $f(x) = \frac{4}{x+1} - 3$

$g(x) = \frac{4}{x^2+1}$, $f(x) = x - 3$