Quiz 3

Key

This is a two-stage quiz.During the first stage, use your knowledge & calculator to take this quiz. You have 15 min. In the second stage. You are now welcome to use your books, notes, and others in the class to retake the same quiz in the remaining half hour. One copy from each group of 2 to 3 people must be turned in.

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

1. [4] Consider the curve defined by $x(t) = 9t^2 + 6$ and $y(t) = t^3 - 9$. At what points(s) does the curve have a tangent line that is parallel to $y = \frac{1}{2}x - 100$?

ie find (x_0, y_0) $\Rightarrow$ $\left.\frac{dy}{dx}\right|_{(x_0,y_0)} = \frac{1}{2}$ (+.5)

$\frac{dy}{dx} = \frac{dy/dt}{dx/dt} = \frac{3t^2 - 0}{18t + 0} = \frac{1}{6}t$ (+.5) (+1.5)

So $\frac{1}{6}t = \frac{1}{2}$ (+1) $\Rightarrow t = 3$

So pts $x(3) = 9(3)^2 + 6 = 81 + 6 = 87$

$y(3) = 3^3 - 9 = 27 - 9 = 18$

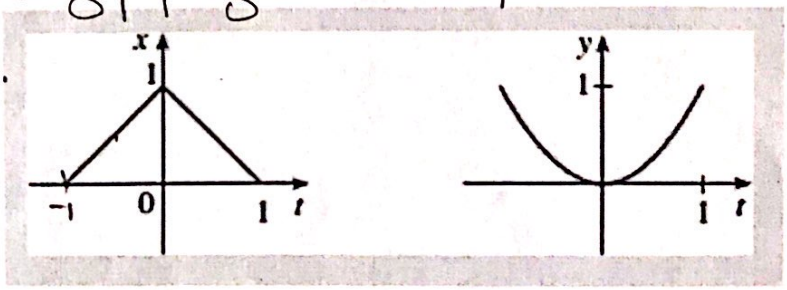
or $(87, 18)$ } pts (+.5)

2. [3] The graphs of $f(t)$ and $g(t)$ are shown below. Sketch the curve defined by $x = f(t)$ and $y = g(t)$ on the axes provided. Indicate with arrows the directions in which the curve is traced as t increases. (+.5)

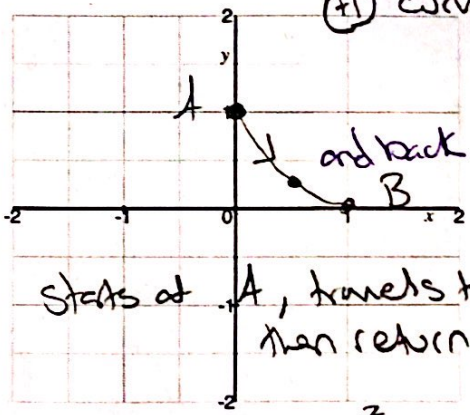
(+1)

t	x	y
-1	0	1
-.5	1/2	1/3
0	1	0

t	x	y
.5	1/2	1/3
1	0	1



(+.5) plt pts
(+1) curve



Starts at A, travels to B then returns

3. [3] Sketch the curve defined by $(3, t, (t+1)^2 - 2)$.

Note the curve is in the plane $x = 3$ so // to yz plane

Start (+.5)
axis/labeled (+1)
parabola (+.5)
put it (+1)