

Note: The curve is actually a parabola:
Reason: $t = x + 2$, so $y = 2 + (x + 2) - (x + 2)^2$
 $= -x^2 - 3x$
 $= -\left(x + \frac{3}{2}\right)^2 + \frac{9}{4}$

Math201 Quiz 1

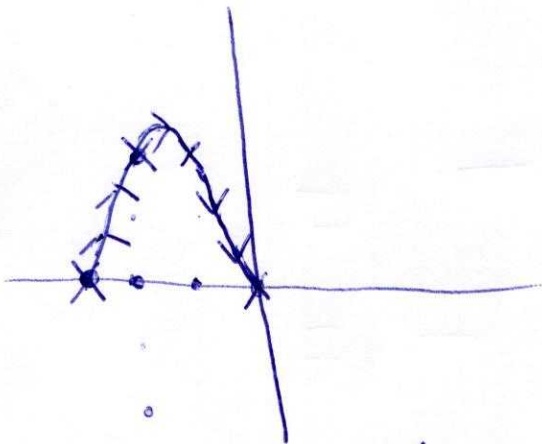
Name Key, id# _____

- 1) (a) Sketch the parametric curve $C: x = t - 2, y = 2 + t - t^2, -1 \leq t \leq 2$
 Indicate by an arrow how the graph is traced as t increases
- (b) Find equation of the tangent line at $t = 1$

Solution:

(a) t	$x = t - 2$	$y = 2 + t - t^2$
-1	-3	0
0	-2	2
1	-1	2
2	0	0

(2 pts)



(3 pts)

(b) $\frac{dy}{dx} = \frac{\left(\frac{dy}{dt}\right)}{\left(\frac{dx}{dt}\right)} = \frac{1 - 2t}{1}$ (3 pts)

$\left. \frac{dy}{dx} \right|_{t=1} = -1$

Eqn. of tgt. line is

The point on the curve given by $t = 1$ is $(t - 2, 2 + t - t^2) = (-1, 2)$

OR:
 $y - 2 = -1(x + 1)$
 $y = -x + 1$ (2 pts)