Lesson #4

Aim: What ARE parametric equations?

Do Now

① How would you graph $x = 2(y+3)^2 - 1$

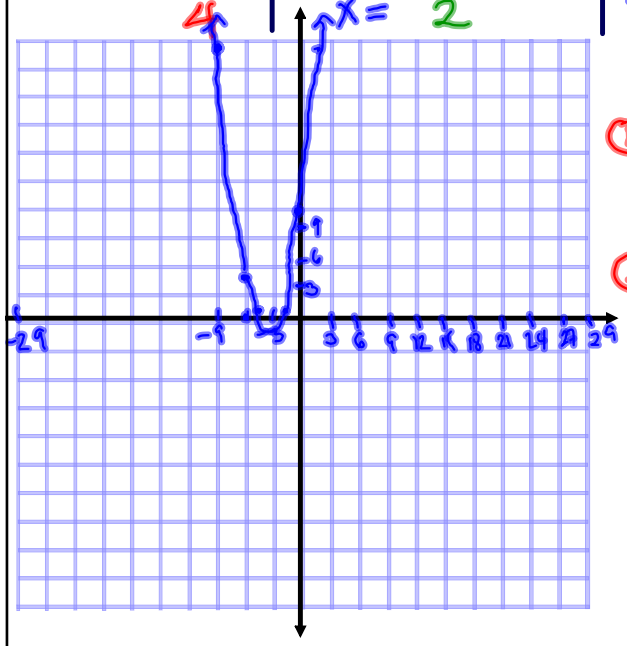
ⓐ Solve for y: $\pm\sqrt{\frac{x+1}{2}} - 3 = y$

ⓑ table of values

ⓒ change the calculator

② complete table & graph

t	$x = t-2$	$y = t^2+3t$	(x,y)
-7	$x = -9$	$y = 28$	$(-9,28)$ ✓
-4	$x = -6$	$y = 4$	$(-6,4)$ ✓
-3	$x = -5$	$y = 0$	$(-5,0)$ ✓
0	$x = -2$	$y = 0$	$(-2,0)$ ✓
2	$x = 0$	$y = 10$	$(0,10)$ ✓
4	$x = 2$	$y = 28$	$(2,28)$



Questions

① what relationship do you see among variables x, y and t?
x, y ARE functions of t

② How is x and y defined? can be defined together or separately.

I- Parametric Equations

1.) A curve in the plane is said to be parametric if the set of coordinates on the curve (x, y) are represented as a function of a third variable t.

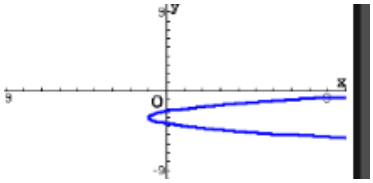
$x = f(t)$
$y = g(t)$

2) In a parametric graph, x is a function of t and y is a function of t (t is the independent variable) but y may or may not be a function of x.

ex1) $x = 2(y+3)^2 - 1$
$y = t$

To use parametric mode in the calculator.

$x = f(y)$



ex2) $y = x^2 + x - 5$ Graph as a parametric equations in the calculator

$y = f(x)$