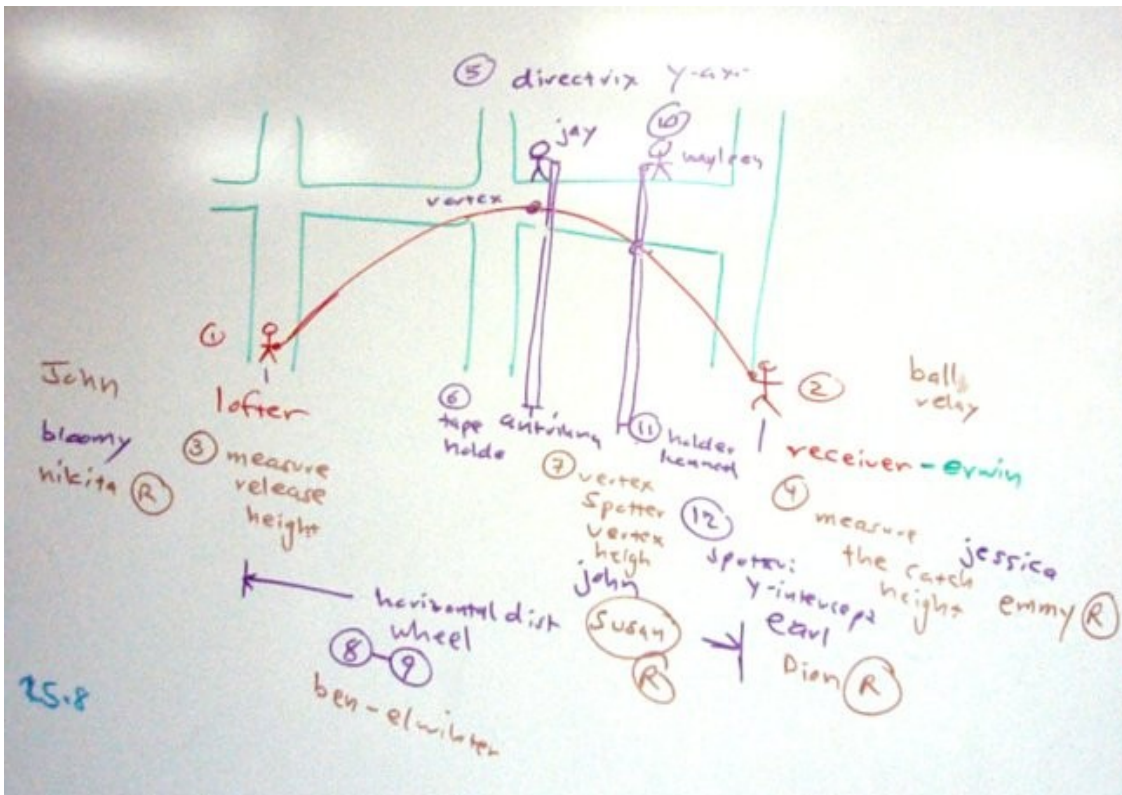


Tennis ball arc

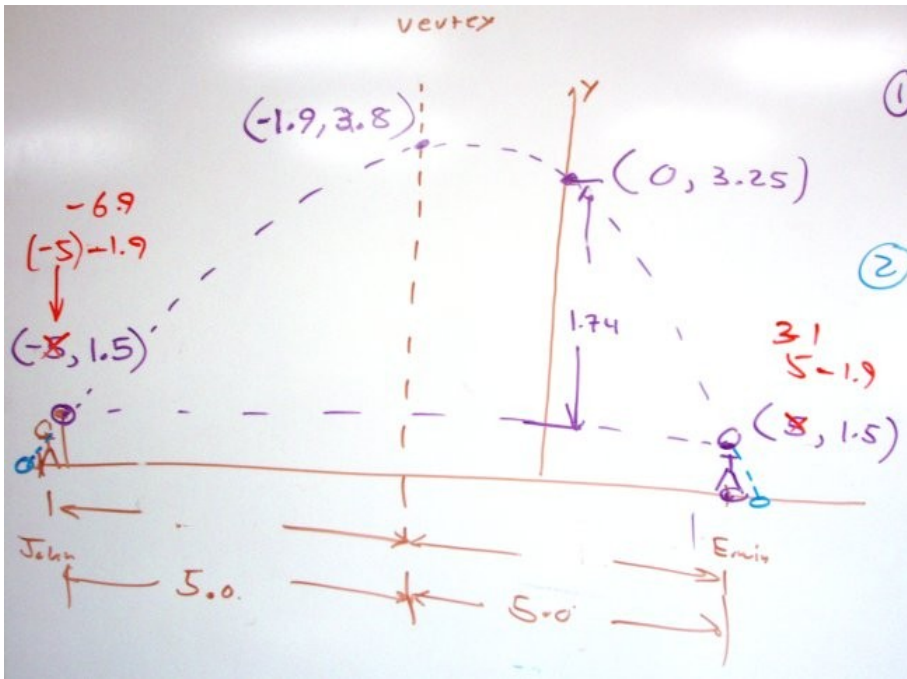
Obtaining a quadratic function from the arc of a ball

A team of students were assigned to designated roles in order to measure the arc of a ball through the air.

Number	Role	Name
1	Lofter	John R.
2	Catcher	Erwin
3	Loft height stick holder	Bloomy
	Loft height recorder	Nikita
4	Catch height stick holder	Jessica
	Catch height recorder	Emmy
5	Directrix: Vertex top tape holder	Jay
6	Vertex tape bottom holder	Antrihna
7	Vertex spotter	John H.
	Vertex recorder	Susan
8	horizontal distance x	Ben
9	horizontal recorder	Elwihter
10	y-axis tape top holder	Mayleen
11	y-axis tape bottom holder	Kenneth
12	y-intercept spotter	Earl
	y-intercept recorder	Dion
	axis of symm to y-axis measurer	[needed]
	axis of symm to y-axis recorder	[needed]



Tennis ball arc



x	y	Coordinates
-6.9	1.5	(-6.9, 1.5)
-1.9	3.8	(-1.9, 3.8)
0	3.25	(0, 3.25)
3.1	1.5	(3.1, 1.5)

Homework: Using the coordinates, find the function for the parabola.

$$(y - 3.8) = a(x - (-1.9))^2$$

$$(3.25 - 3.8) = a(0 - (-1.9))^2$$

$$-0.55 = 3.61a$$

$$a =$$

$$-0.1524$$

$$y = -0.1524(x + 1.9)^2 + 3.8$$

$$\text{x-intercepts: } -1.9 \pm \sqrt{(-3.8/-0.1524)}$$

$$-1.9 \pm$$

$$4.99$$

x-intercepts (function zeroes)

Theoretic

Left

$$-6.89$$

Right

$$3.09$$

$$y = -0.1524x^2 - 0.57912x + 3.25$$

