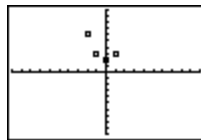


**TOPIC 20: The Points and Curves Game**

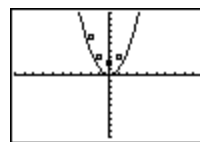
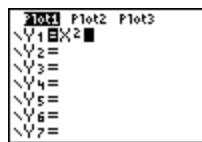
Pre-Game Warm-up: Before we begin the game you will have some time to practice.

*Example 1:* Find an equation of the graph that contains the point  $(0,2)$ ,  $(-2,6)$ ,  $(-1,3)$ , and  $(1,3)$ .

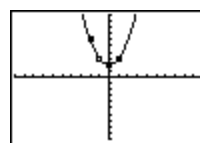
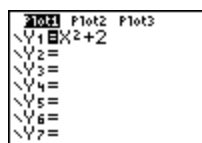
Enter the points into the L1 and L2 lists and make a scatter plot. Your graph should look like the one shown below:



Which curve will “hit” the points? We try  $y = x^2$  (see the screens below).



The graph of  $y = x^2$  does not contain the points, but it appears that a translation will. We now try  $y = x^2 + 2$ , which translates the graph of  $y = x^2$  two units upward.



The graph of the equation  $y = x^2 + 2$  contains the given points.

For exercises 1-5, plot the points and find a single equation that contains all the points.

- |  |  |
|--|--|
| 1. $(2,3)$ , $(-2,-5)$ , $(3,5)$                         | 2. $(-4,2)$ , $(-2,0)$ , $(1,3)$ , $(4,6)$ |
| 3. $(2,2)$ , $(4,2)$ , $(1,5)$ , $(5,5)$ , $(6,10)$      | 4. $(-3,0)$ , $(-2,1)$ , $(1,2)$ , $(6,3)$ |
| 5. $(-1,-11)$ , $(3,5)$ , $(2,-2)$ , $(0,-4)$ , $(1,-3)$ |  |

The Game

Input the ordered pairs that your instructor has written on the board into your L1 and L2 lists. Plot the points on a scatter plot as described in the pre-game warm-up. *The object of the game is to write the **least** number of equations that “hit” all the points.* You may use linear, quadratic, cubic, square root, and absolute value equations. Remember how to translate graphs!