

# Pre-Algebra Activity 2: Creating Dynamic Graphs: A Quadratic Activity

Vicki Phillips

CALCULATORS: Casio: fx-9750G Plus • Casio: cfx-9850G Series

## Pre-Algebra/Algebra 1 Student Handout

Dynamic graphs can be a powerful tool to help Pre-Algebra and Algebra you understand the role of the variables in linear and quadratic functions.

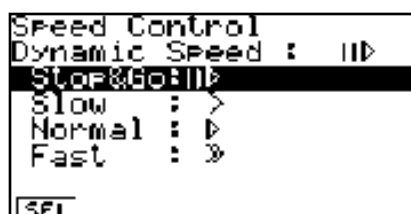
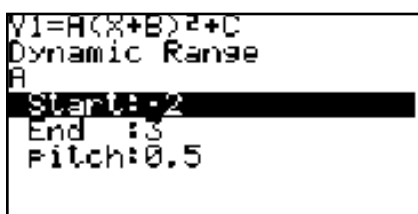
### Quadratic Functions $Y = A(X + B)^2 + C$

To investigate the role of coefficient variable  $A$  in the quadratic function above using the dynamic graphing feature of the Casio calculator, choose **DYNA** from the main menu. Select **F5(B-IN)**, select  **$Y = A(X + B) + C$** . Choose the initial viewing window. To display the coefficient menu press **F4(VAR)**.

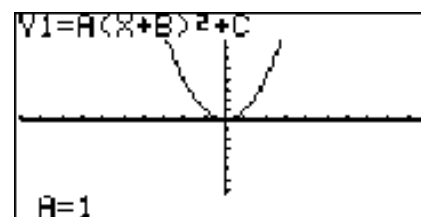
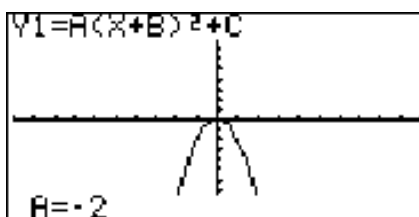


Select **A** as the dynamic variable by highlighting **A =** and pressing **F1**. Let **B = 0 EXE** and **C = 0 EXE**. Press **F2(RANG)**. Start at **-2 EXE**, end at **3 EXE**, pitch **0.5 EXE**. Stop and Go is recommended for **SPEED (F3)** to control the change the value of  $A$ . Press **EXIT** to leave the spec control screen.

For our purposes here, it is best to let  $B = 0$  and  $C = 0$  (which places the vertex of the parabola at the origin). Concentrate on the effect changing the value of  $A$  has on the graph.



Press **F6(DYNA)** to view the graph. Press **EXE** to move to the next graph. What appears to be happening? Explain what happens when  $A = 0$  and the graph seems to disappear. Try changing the values in the **RANG** and test your conjectures. Be creative!

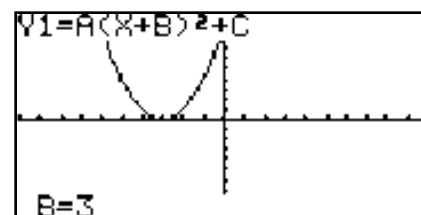
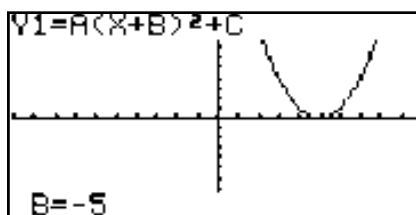


# Pre-Algebra Activity 2: Creating Dynamic Graphs: A Quadratic Activity

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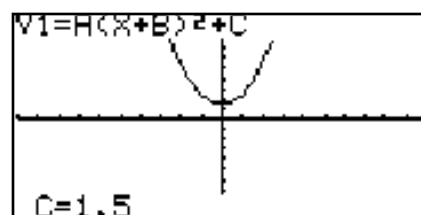
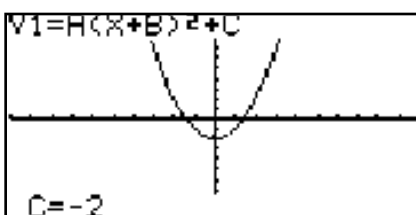
## Student Handout

Exit to the Dynamic Function screen and press **F4**(VAR) to change the dynamic variable to  $B$ . Highlight  $B =$  and press **F1**(SEL) to select  $B$  as the dynamic variable. To simplify, let  $A = 1$  and  $C = 0$ . Press **F2**(RANG), start at  $-5$ , end at  $5$  and pitch  $1$ . Stop and Go is recommended (try changing the speed after you have done the activity once) for **F3**(SPEED).



Press **F6** to view the graph. Explain what is happening. Try other values in the range to test your conjectures.

Exit to the Dynamic Function screen and press **F4**(VAR) to change the dynamic variable to  $C$ . Highlight  $C =$  and press **F1**(SEL) to select  $C$  as the dynamic variable. To simplify, let  $A = 1$  and  $B = 0$ . Press **F2**(RANG), start at  $-2$ , end at  $2$  and pitch  $.5$ . Stop and Go is recommended (try changing the speed after you have done the activity once) for **F3**(SPEED).



Before viewing the graph, predict what effect changing  $C$  will have on the graph. Press **F6** to view the graph and confirm your predictions. On the back of this sheet explain what is happening? Try other values in the range to test your conjectures.

On the back of this sheet, write a conclusion about the effects of the variables ( $A$ ,  $B$  and  $C$ ) on the graph of a quadratic function in the form  $Y = A(X + B) + C$ . Predict where the graph of  $Y = .5(X - 2)^2 + 3$  would appear and whether it would be wide or narrow when compared to the graph of  $Y = X$ . Graph the equation in Graph mode to confirm.

