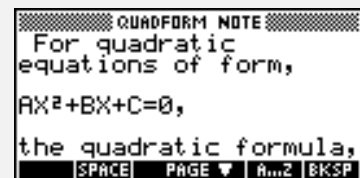


Objectives:

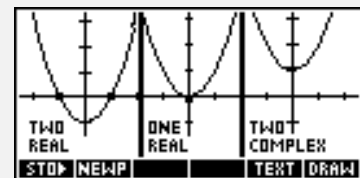
Using the **QUADFORM** applet, the student will be able to determine the nature of the roots, predict how many times, if any, the graph of the parabola will cross the x-axis, and find the solution(s).

Functionality:

When the student selects **START**, the **QUADFORM NOTE** will be displayed.



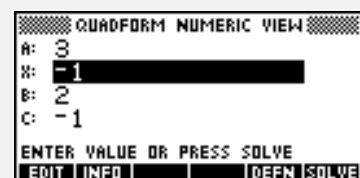
The student should then view the **SKETCH** to see what parabolas look like when they have two real, one real, and two complex roots.



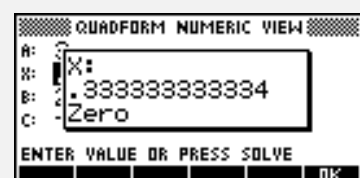
Press **VIEWS** to enter A, B, and C, in the equation $Ax^2 + Bx + C = 0$, to display the discriminant, and to plot in either the decimal or the integer window.



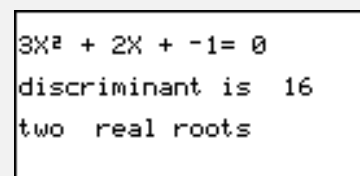
The student can solve the equation for x, by highlighting the x and by choosing **Solve** in the Numeric View.



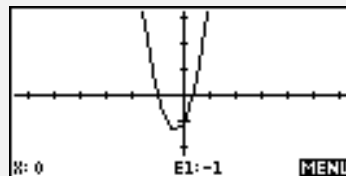
Note: The student should press **INFO** to determine the nature of the solution. **Zero**, or **Sign Reversal** indicates a root while **Extremum** implies no real roots.



Choosing **Discriminant** will display the quadratic equation, the value of the discriminant, and the nature of the roots.



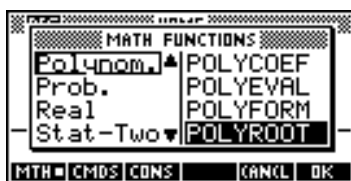
The student can plot the graph after entering the values for A, B and C by highlighting x and pressing **PLOT**.



Additional Exploration:

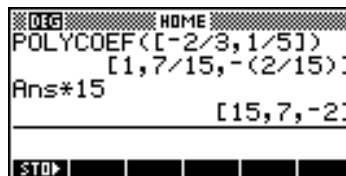
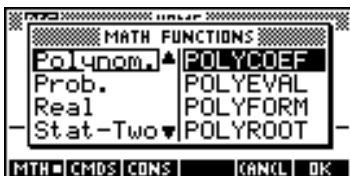
At the HOME screen, use POLYROOT to find the roots of a quadratic function. POLYROOT can be typed in the edit line or can be found by pressing **MATH**, **P**. The syntax for this command is **POLYROOT([coefficients])**. An example would be:

Find the roots of $y = 4x^2 - 5x - 6$.



At the HOME screen, use POLYCOEF to find a quadratic function given its roots. POLYCOEF can be typed in the edit line or can be found by pressing **MATH**, **P**. The syntax for this command is **POLYCOEF([roots])**. An example would be:

Find a quadratic function whose roots are $-\frac{2}{3}$ and $\frac{1}{5}$.



Ideas can be applied to:

Algebra I, Algebra II, Precalculus

Programs associated with this applet:

.QF.D, .QF.S, .QF.SV