



Rainbow Parabola Teacher Guide

Project Goal:

Students will have created their very own graphing calculator and explore it using various transformations of a Rainbow Parabola

Standard:

[CCSS.MATH.CONTENT.HSF.BF.B.3](#)

Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

Student Guide

Teacher Suggestions

This lesson is ideal for about a 60 minute class period. As usual, make sure you use the link to the student guide above to run the lesson in advance yourself so you'll be able to help students troubleshoot common errors. Solutions to task 2 steps are on the next page, and students should be at least introduced to function transformations before attempting the challenge section.

#CSandMath



@BoundsofoutMath & @ashleyanntewes



Solutions:

Task 2 Step 1 Solution

```
when clicked clicked
clear
set x to -130
parabola

define parabola
repeat 27
  set y to .01 * x * x
  go to x: x y: y
  change x by 10
  pen down
pen up
```

Task 2 Step 2 Possible block arrangement

```
when clicked clicked
clear
set pen color to red
set pen size to 3
set x to -130
parabola

define parabola
repeat 27
  set y to .01 * x * x
  go to x: x y: y
  change x by 10
  pen down
  change pen color by 5
pen up
```

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Task 2 Step 3 Change



Challenge 1 Change



Challenge 2 Change



Challenge 3 Change

