

ANGRY BIRDS PROJECT

Goal: Design level based off of equations of birds and determine equations of birds in both vertex and standard form.



Requirements

- 1) Level will be created using a coordinate grid and must be in units of distance vs height. Keep everything in the first quadrant.
- 2) Level must consist of at least three pigs on towers of your design. At least 2 pigs must be hidden behind an object that must be flown over.
- 3) At least 3 birds must be used and no more than 5. The paths of the birds must be in parabolic form. Therefore, stick to the red bird. If you want to use a different colored bird, you must also consider their paths as if you were playing the game.



- 4) You will draw the parabolic path from the launcher to each pig. Each parabolic path must fit the symmetry attribute of parabolas as best as possible.
- 5) You must be able to identify the vertex, initial height, reasonable domain and range, landing point, and other additional points for each path drawn.
- 6) You will need to create the vertex form for each path and convert it to standard form.
- 7) You will need to create a regression equation for each path. You will need to use at least 10 points for each path.

Questions to answer



- a. How does the standard form created from the vertex equation compare to the standard form created from the regression?
- b. Use $-b/2a$ on the regression equation and find the vertex. How does this compare to the vertex used on the vertex equation?



- c. How does the c value of the regression equation compare to the initial height shown on the angry bird model?
- d. Compare the “a” values for each regression equation and the shape of each parabola.

(Hint: Think transformations)

e. Use the quadratic formula to determine the landing distances for each bird if they were to not crash into anything.

f. What would be the time frame that each bird is at least 20 units in the air?

You can work in a group of 2 or on your own. There is no difference in grade.



* NOTE – ALL EQUATIONS MUST HAVE DIFFERENT MAXIMUMS

Display

To do:

The option is yours on how to display the information but you must have a coordinate grid showing your paths.

You may draw or use cut outs for your birds and pigs. Make it nice and neat. Make it colorful if possible.

Include information of function on graph. (work is not necessary on graph but must be included in separate report)

The questions need to be answered in a paragraph form. Use evidence from your work in your explanation.



Grading Rubric for Angry Birds Project

| Points | Calculations (x2) | Graph (x2) | Questions | Presentation |
|--------|---------------------------------------|---|---|--|
| 4 | All calculations are accurate. | Graph is accurate. All parts of the graph are labeled. Each bird and pig is included. | All questions are answered correctly. | Professional looking, no grammatical errors. Neat and colorful. |
| 3 | Most calculations are accurate. | Graph is mostly accurate. Most parts are labeled. Each bird and pig is included. | Most questions are answered correctly | Nice execution, may have minor errors. Neat and colorful. |
| 2 | Some calculations are accurate. | Some of graph is accurate. Some parts are labeled. Birds or pigs may be missing. | Some questions are answered correctly. | Pretty rough, lots of errors. Neat or colorful. |
| 1 | None of the calculations are accurate | Graph lacks accuracy. Not labeled, Birds or pigs missing. | None of the questions are answered correctly. | Amateur hour, errors distract from information. Neatness is lacking. |

A: 22 – 24

B: 17 – 21

C: 12 – 16

D: 7 – 11

F: 0 – 6

These scores will be converted to a grade out of 50 points





Mr. Rodriguez